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ORIGINAL

Pilot Program: NRC Severe Reactor Accident Incident Response Training Manual

U.S. Nuclear Regulatory Commission Response

U.S. Nuclear Regulatory Commission

Office of Inspection and Enforcement

C. A. Sakenas, T. J. McKenna, K. Perkins, C. W. Miller, L. M. Hively, R. W. Sharpe, J. G. Giitter, R. M. Watkins

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FOREWORD

Over the past few years the Office of Inspection and Enforcement (IE), Division of Emergency Preparedness and Engineering Response, has undertaken a program to upgrade the NRC capabilities to respond to severe reactor accidents. As part of this effort, basic training sessions have been presented by IE staff to all response personnel (Headquarters and regions). Through the process of providing this training a standard student text has evolved.

This pilot training manual has been written to fill the need for a general text on NRC response to reactor accidents. The manual is intended to be the foundation for a course for all NRC response personnel.

This set of manuals is not licensing guidance. Rather, it is designed to present to NRC personnel the best understanding of response planning for a serious reactor accident.

These draft manuals are intended to change over time as NRC staff continues to gain experience. Suggestions are requested and should be sent to the Incident Response Branch.

E L Jordan

Edward L. Jordan, Director
Division of Emergency Preparedness
and Engineering Response
Office of Inspection and Enforcement

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PREFACE

U.S. Nuclear Regulatory Commission Response is the fifth in a series of volumes that collectively summarize the U.S. Nuclear Regulatory Commission (NRC) emergency response during severe power reactor accidents and provide necessary background information. This volume describes NRC response modes, organizations, and official positions; roles of other federal agencies are also described briefly. Other volumes in the series are:

- Volume 1--Overview and Summary of Major Points
- Volume 2--Severe Reactor Accident Overview
- Volume 3--Response of Licensee and State and Local Officials
- Volume 4--Public Protective Actions--Predetermined Criteria and Initial Actions

Each volume serves, respectively, as the text for a course of instruction in a series of courses for NRC response personnel. These materials do not provide guidance or license requirements for NRC licensees. The volumes have been organized into these training modules to accommodate the scheduling and duty needs of participating NRC staff. Each volume is accompanied by an appendix of slides that can be used to present this material. The slides are called out in the text.

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CONTENTS

PREFACE iii

LIST OF FIGURES vii

LIST OF TABLES ix

LIST OF ACRONYMS AND INITIALISMS FOR VOLUMES 1-5 xi

1. U.S. NUCLEAR REGULATORY COMMISSION RESPONSE 1
   1.1 OBJECTIVES 1
   1.2 OVERVIEW: THE NRC AND EMERGENCY RESPONSE AT LICENSED FACILITIES 2
   1.3 INTRODUCTION 5
   1.4 NRC RESPONSE MODES 7
      1.4.1 Standby Mode 7
      1.4.2 Initial Activation Mode 8
      1.4.3 Expanded Activation Mode 8
   1.5 ACTIVITIES OF THE EMERGENCY ORGANIZATION 10
   1.6 NRC EMERGENCY RESPONSE ORGANIZATION 11
      1.6.1 Response Management 17
      1.6.2 Reactor Safety Assessments 23
      1.6.3 Protective Measures Assessment 25
      1.6.4 Safeguards/Security Assessment Functions and Objectives 29
      1.6.5 Government Liaison Functions and Objectives 29
      1.6.6 Congressional Liaison 32
      1.6.7 Public Affairs Functions and Objectives 32
      1.6.8 Response Coordination Functions and Objectives 33
   1.7 ROLE OF THE RESIDENT INSPECTOR 34
   1.8 ROLES OF OTHER FEDERAL AGENCIES 35
      1.8.1 Federal Radiological Emergency Response Plan 35
      1.8.2 Location of Federal Agency Decision Makers/Coordinator 37
   1.9 OFFICIAL NRC POSITION 43
      1.9.1 Information Status 43
      1.9.2 Licensee Interface 44
      1.9.3 State/Local Interfaces 47
      1.9.4 Internal NRC Interface 48
   1.10 MAJOR POINTS 49

APPENDIX A. SLIDES RELATING TO VOLUME 5 OF THE SEVERE REACTOR ACCIDENT INCIDENT RESPONSE TRAINING MANUAL 51

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LIST OF FIGURES

Figure		Page
1.1	Typical organization of the Base Team	16
1.2	Organization of NRC Headquarters (lead during initial activation)	18
1.3	Typical organization of the Site Team (lead during expanded activation).	19
1.4	Expanded activation Site Team organization chart.	20
1.5	Federal response management for a radiological emergency at a nuclear power reactor.	39

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LIST OF TABLES

Table		Page
1.1	Typical relationship of accident classifications, NRC response modes, and NRC lead organizations	9
1.2	Typical NRC actions during a severe nuclear plant accident	12
1.3	NRC response organizations responsible for control functions.	15
1.4	Roles of federal agencies during an emergency response	38
1.5	Activities of typical federal agencies other than NRC following initiation of the Federal Radiological Emergency Response Plan.	40
1.6	Location of federal agency decision makers	42
1.7	Typical parameters that NRC expects to be considered for a light-water reactor incident	46

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LIST OF ACRONYMS AND INITIALISMS FOR VOLUMES 1-5

ALARA	As low as reasonably achievable
AMS	Aerial Measurements System(s)
ARAC	Atmospheric Release Advisory Capability
ASC	Administrative Support Coordinator
AST	Administrative Support Team
BT	Base Team (NRC Regional Office)
BWR	Boiling Water Reactor
CDPA	Civil Defense Preparedness Agency
CFA	Cognizant Federal Agency
CFR	Code of Federal Regulations
CL	Congressional Liaison
CRD	Control rod drive
CRDHS	Control rod drive hydraulic system
CSF	Critical Safety Function
DBA	Design Basis Accident
DOC	Department of Commerce, U.S.
DOD	Department of Defense, U.S.
DOE	Department of Energy, U.S.
DOI	Department of Interior, U.S.
DOT	Department of Transportation, U.S.
DSO	Director of Site Operations
EAL	Emergency Action Level
ECCS	Emergency Core Cooling System
EDO	Executive Director of Operations
ENS	Emergency Notification System
EO	Emergency Officer
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedure
EPA	Environmental Protection Agency, U.S.
EPRI	Electrical Power Research Institute
EPZ	Emergency Planning Zone
ERC	Emergency Response Coordinator
ERM	Emergency Response Manager
ERO	Emergency Response Organization
ERT	Emergency Response Team (FEMA organization)
ESF	Engineered Safety Feature
EST	Emergency Support Team (FEMA organization)
ET	NRC Executive Team
ETA	Estimated time of arrival
FBI	Federal Bureau of Investigation
FDA	Food and Drug Administration, U.S.
FEMA	Federal Emergency Management Agency
FRC	Federal Response Center
FRERP	Federal Radiological Emergency Response Plan
FRMAC	Federal Radiological Monitoring and Assessment Center
FRMAP	Federal Radiological Monitoring and Assessment Plan
FTS	Federal Telephone System
GLC	Government Liaison Coordinator

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GLM	Government Liaison Manager
GLO	Government Liaison Officer
GLT	Government Liaison Team
HHS	Health and Human Services, U.S. Department of
HOO	NRC Headquarters Operations Officer
HPCI	High-pressure coolant injection
HPCS	High-pressure core spray
HPN	Health Physics Network
HQ	NRC Headquarters
HUD	Housing and Urban Development, U.S. Department of
IE	NRC Office of Inspection and Enforcement
ICRP	International Commission on Radiological Protection
IDAS	Interactive Dose Assessment System
IRB	Incidence Response Branch
IRC	Regional NRC Incident Response Center
IRDAM	Interactive Rapid Dose Assessment Model
JIC	Joint Information Center
LC	Liaison Coordinator
LNO	Liaison Officer
LOCA	Loss of Coolant Accident
LPCI	Low-pressure coolant injection
LPCS	Low-pressure core spray
LT	Liaison Team
LWR	Light Water Reactor
NCS	National Communication System
NMSS	NRC Office of Nuclear Material Safety and Safeguards
NOAA	National Oceanic and Atmospheric Administration
NRC	Nuclear Regulatory Commission, U.S.
NRR	NRC Office of Nuclear Reactor Regulation
NWS	National Weather Service
OC	Operations Center
OSC	Operations Support Center (site)
PA	Public Affairs
PAC	Public Affairs Coordinator
PAG	Protective Action Guides
PAM	Public Affairs Manager
PAR	Protective Action Recommendation
PASS	Post-accident Sampling Systems
PAT	Public Affairs Team
PMC	Protective Measures Coordinator
PMM	Protective Measures Manager
PMT	Protective Measures Team
P-T	Pressure-Temperature
PWR	Pressurized Water Reactor
RA	Regional Administrator
AT	Radiological Assistance Team
RBE	Relative biological effectiveness
RCIC	Reactor core isolation cooling
RCT	Response Coordination Team
RDO	Regional Duty Officer
R.G	Regulatory Guide
RHR	Residual heat removal
RI	Resident Inspector

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RM	Resource Manager
RO	NRC Regional Office
RSC	Reactor Safety Coordinator
RSM	Reactor Safety Manager
RST	Reactor Safety Team
SC	Safeguards/Security Coordinator
SFO	Senior FEMA Official
SGC	Safeguards/Security Coordinator
SGT	Safeguards Team
SI	International System (of measurement)
SLC	Standby liquid control
SM	Safeguards/Security Manager
SO	Status Officer
ST	Site Team
STL	Site Team Leader
TLD	Thermoluminescent dosimeter
TMI-2	Three Mile Island--Unit 2
TSC	Technical Support Center
USDA	U.S. Department of Agriculture
WHO	World Health Organization

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1. U.S. NUCLEAR REGULATORY COMMISSION RESPONSE

1.1 OBJECTIVES

Slides 1 and 2

The objectives of this section are to

- describe the roles of the U.S. Nuclear Regulatory Commission (NRC) in the event of a nuclear power plant accident;
- describe NRC response modes, explain the criteria that determine each response mode, and list the basic components of the NRC response organization;
- describe briefly the roles, limitations, and composition of the various elements of the NRC response organization;
- list the other federal agencies and their roles;
- describe how NRC interfaces with the licensee and with state and local officials during an emergency;
- describe the ongoing assistance provided to the licensee during an emergency; and
- describe the kind of information that can be released as the "official" NRC position during an event (i.e., Status Summary).

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1.2 OVERVIEW: THE NRC AND EMERGENCY RESPONSE AT LICENSED FACILITIES

Slide 2

In fulfilling its legislated mandate for protecting the public health and safety, NRC has developed a plan (NUREG-0728) and procedures (NUREG-0845) that detail the agency's response to incidents involving licensed material and activities. In its emergency response plan, NRC recognizes that there are two primary decision makers in a radiological emergency at a licensed power reactor: the licensee and the state or local government. The licensee has primary responsibility for mitigating the consequences of the event by taking the necessary and appropriate in-plant actions and by recommending the appropriate off-site protective actions. The state or local government has primary responsibility for determining whether and how to implement the protective action as it was recommended by the licensee.

NRC has several roles in a radiological emergency at a licensed facility. The primary role is to monitor the activities of the licensee to ensure that appropriate actions are being taken to mitigate the consequences of the incident and to ensure that appropriate protective action recommendations are made to off-site officials. In addition, NRC will support and assist state and local officials by performing independent assessments and confirming, where appropriate, licensee's protective action recommendations. In addition to interfacing with off-site officials, the NRC response organization will be the conduit of technical information from the facility to other federal agencies and will keep the media informed of NRC's actions and knowledge of event status. NRC may be required, in an extreme and unique situation, to take action to direct the licensee's response by issuing formal orders to the licensee and then monitoring implementation of actions ordered. [NRC's intent is that this authority would not be exercised from

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Headquarters (HQ) but may be exercised by the Regional Administrator (RA) at the site on the situation-specific approval of the NRC Chairman.]

Significant improvements in NRC's response to incidents have occurred since the accident at Three Mile Island (TMI) in March 1979. These include establishment of a single decision maker for NRC during an emergency, development of a federal and agency response plan, establishment of direct communication lines between power reactor sites and the Incident Response Center (IRC) in Bethesda, Maryland, to improve communications capability, establishment of a designated staff of operations officers and an upgrade in their training in reactor systems, an upgrade in response facilities at Headquarters and the regional offices, and finally, development of a means to receive digitized information on key plant parameters directly from the site, which will give NRC valuable current information to assist in accident assessment.

NRC's response to incidents begins with an Operations Officer located around the clock in the Headquarters Incident Response Center in Bethesda, Maryland. Direct lines have been installed between each commercial nuclear reactor (and some fuel facilities) and the Incident Response Center in Bethesda; this network is referred to as the Emergency Notification System (ENS). All initial notifications of events are reported to this NRC Operations Officer, who has received specific training in reactor systems. All reports of significant events are brought to the attention of the NRC regional duty officers, Headquarters, and the emergency officer. Decisions to place in standby or to activate the NRC emergency response organization are generally made by regional and Headquarters upper management through these duty officers. In standby, a few members of the Headquarters management and cognizant staff report to the Operations Center (OC), while the appropriate regional office fully staffs its Incident Response Center. The Regional Administrator, who is located at the regional office, directs both organizations in assessing the severity of the event.

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Based on the information available from the the licensee, a Headquarters Executive Team (ET) member decides whether to escalate or terminate the NRC response. The decision to escalate NRC's response includes sending a regional team led by the Regional Administrator to the site. It is NRC policy that the emergency should be managed from the site. The Site Team (ST) is generally composed of a leader (Regional Administrator) and specialists in reactor systems and health physics, supported by public affairs, safeguards, and governmental liaison personnel. These individuals will monitor the licensee's actions in assessing the severity of the accident and in recommending protective actions and will assist off-site officials as warranted.

During this phase of initial activation, the lead for the NRC response moves from the Regional Office (RO) to Headquarters, because the regional decision maker (i.e., the Regional Administrator) is en route to the site. The Headquarters team is an Executive Team directed by the Chairman (or his designee). The Atomic Energy Act was amended to authorize the Chairman to act as a single administrator/decision maker (i.e., to make decisions without Commission vote) during emergency response involving NRC-licensed and -regulated activities. The Chairman may subsequently delegate this authority to the Regional Administrator at the site of the event.

The Executive Team is assisted by specialists in reactor systems and health physics (including public protective measures), as well as by public affairs, governmental liaison, congressional affairs, safeguards, and administrative personnel. In the event of actual or predicted significant off-site releases of radioactivity, additional help would be available from other federal agencies such as the Department of Energy (DOE), the Federal Emergency Management Agency (FEMA), the Department of Health and Human Services (HHS), Environmental Protection Agency (EPA), and the Department of Agriculture (USDA), as identified in the Federal Radiological Emergency

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Response Plan (FRERP).

Once the NRC Site Team of 12 to 18 specialists is in place (approximately 2 to 6 h after being dispatched) and has been fully briefed on the event status, the Executive Team Director (the chairman) may transfer his decision-making authority to the Regional Administrator and designate him as the Director of Site Operations (DSO). After designation of the Director of Site Operations, Headquarters continues to provide technical assistance to the Site Team while the staff at the regional office provides logistics support. Additional resources from Headquarters and the other regional offices may be dispatched to the site to support the regional response. This would constitute an augmented or expanded Site Team that would be staffed according to the specifics of a significant, extended event.

1.3 INTRODUCTION

Slide 4

The roles of NRC during incidents at nuclear power plants are to monitor actions by the licensee to ensure that people in the vicinity of the plant are adequately protected and to provide any assistance requested by the licensee or off-site officials. NRC's principal role in the event of a power plant emergency is to ensure that appropriate protective actions are being taken. If it appears that warranted protective actions are not being recommended by the licensee or are not being taken by off-site officials, NRC will contact the licensee or off-site officials and present its concerns. However, it must be recognized that, like the licensee, NRC cannot order the implementation of any particular off-site protective action. Only off-site officials (e.g., governors, mayors, county sheriffs, etc.) have that authority.

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Everyone involved should also recognize that state and local officials must act promptly to initiate protective actions. This is crucial for General Emergencies, where prompt protective action is essential. The NRC response organization should not be involved in the prompt protective action decision making in a General Emergency because it may take more than an hour to become fully operational; also, NRC is not necessarily familiar with current site-specific plant and local conditions. Trying to involve NRC could slow down this critical decision-making process in the immediate, early time frame.

NRC is the lead federal agency concerned with technical aspects of an accident at one of its licensed facilities (e.g., nuclear power plants). The specific NRC response roles are to

- monitor the licensee to ensure that appropriate protective action recommendations are being made off site;
- support off-site authorities, including confirming the licensee's recommendation to off-site authorities, if requested;
- support the licensee;
- keep other federal agencies and entities (e.g., Congress and the White House) informed of the status of the incident;
- keep the media informed of NRC's knowledge of the status of the incident, including coordination with other public affairs groups; and
- intervene in a limited fashion to direct the licensee's on-site response in some unusual and very rare situations.

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In carrying out its roles early in an accident, NRC will concentrate on conducting an independent assessment of in-plant conditions and their relationship to off-site protective actions. NRC will be especially interested in local actions off site during a General Emergency. The specific NRC response is described in NUREG-0728, NUREG-0845, and supplements. In addition, individual team and technical procedures describe step-by-step what the individual does. Each member of the NRC response organization is responsible for knowing and understanding these procedures.

1.4 NRC RESPONSE MODES

Slide 5

NRC's basic philosophy is that the accident site is the best place to gather information, understand the situation, and interface with the licensee and off-site officials. Therefore, NRC procedures for serious accidents are geared toward getting the appropriate people to the site as soon as possible (within 2 to 8 hr).

1.4.1 Standby Mode

For a situation that is uncertain and that presents a potentially serious condition requiring monitoring, NRC would enter the Standby Mode. NRC will generally go into Standby Mode whenever the licensee declares an alert or whenever events warrant monitoring. During Standby, the appropriate Regional Incident Response Center is staffed to monitor the situation and a cadre of members with expertise specific to the particular event is called into the Headquarters Operations Center. A small group of regional personnel may also be dispatched to the site. The Regional Office has the lead during the Standby Mode.

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1.4.2 Initial Activation Mode

The Initial Activation Mode occurs after NRC management (the Regional Administrator in conjunction with Executive Team members) decides that the event is serious enough to call for an NRC management presence on site. During this period, Headquarters "takes the lead" while the regional staff and Site Team leader (usually the Regional Administrator) leave for the site, and direction of the NRC response is held by the Executive Team Director (Chairman of the Commission or designee) at the Headquarters Operations Center in Bethesda, Maryland. While the regional team is in transit to the site and is being briefed at the site (2 to 8 hr), the Executive Team Director speaks officially for NRC. Headquarters monitors the situation primarily via dedicated and commercial phone lines to the plant and normal phone lines to off-site officials. After arriving and receiving an on-site briefing by the licensee, the Site Team leader will generally be designated the Director of Site Operations. The intent is to transfer as much decision-making authority to the site as necessary, with Headquarters and the Regional Office serving in a supporting role.

1.4.3 Expanded Activation Mode

Once the Site Team leader has been designated as the Director of Site Operations, the mode is called Expanded Activation. In this mode, any NRC recommendations, information releases, and guidance will be provided by the Director of Site Operations. The specific authority and responsibility that may be conferred on the Director of Site Operations are discussed in Sect. 1.6.1. After the Director of Site Operations is designated, any questions concerning NRC response at the site should be directed to the Site Team. During this mode, Headquarters and the Regional Base Team response organization support the Site Team and the Director of Site Operations. Table 1.1 shows the relationship of accident classifications, NRC

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Table 1.1. Typical relationship of accident classifications, NRC response modes, and NRC lead organizations

Licensee classification	Typical NRC response mode	Lead organization
Alert and other situations that warrant monitoring	Standby	NRC Regional Office Base Team
Site Area or General Emergency	Initial Activation Expanded Activation Deactivation	Headquarters Site Team Region (Regional Administrator)

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response modes, and NRC organizations.

1.5 ACTIVITIES OF THE EMERGENCY ORGANIZATION

During normal operations, the Headquarters Operations Officer (HOO) is the only person staffing the Operations Center 24 hr/day. The Headquarters Operations Officer receives all event notifications, records the initial information, provides an initial evaluation of its classification, and informs the Regional Duty Officer (RDO) and Headquarters Emergency Officer (EO). The Headquarters Emergency Officer and Regional Duty Officer are on call 24 hr/day. The Headquarters Operations Officer will involve the site, the Emergency Officer, and the Regional Duty Officer in a "party line" telephone conference to discuss the event. If they decide that further NRC action is necessary, the Emergency Officer and the Regional Duty Officer will contact an Executive Team member and the Regional Administrator, who will decide if the NRC should go to Standby or Initial Activation. In addition, notification of incidents reported by non-power-plant licensees and the general public may be handled by the Headquarters Operations Officer. During non-office hours, all inquiries and notifications to the NRC go to the Headquarters Operations Officer. The Headquarters Operations Officer is the licensee's initial point of contact with the NRC during a reactor incident.

If an event is determined to warrant the activation of NRC response in either the Standby or Initial Activation mode, the Headquarters Operations Officer is responsible for notifying the Response Coordination Team (RCT) members and for calling the Backup Headquarters Operations Officer. The Response Coordination Team member initiates further calls to activate the Headquarters response. Before the Backup Headquarters Operations Officer arrives, the Duty Headquarters Operations Officer will be extremely busy setting up the communication links in the Operations Center and receiving calls from the media and the general public.

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1.6 NRC EMERGENCY RESPONSE ORGANIZATION

Slide 6

The NRC response is based on the principle that the agency should always have a single spokesperson and that the spokesperson should be located at the site as soon as possible. In the Normal and Standby modes, the lead is with the NRC Regional Office. In Initial Activation, the lead is with Headquarters and the Executive Team Director (normally the Chairman). In Expanded Activation, the lead is delegated to the site with the designation of a Director of Site Operations (normally the Regional Administrator). Table 1.2 shows a typical NRC response during the evolution of an event; the relation of NRC response to state and local actions is also listed. The following paragraphs further explain the three components of the NRC response.

Slide 7

The three parts to the NRC response organization are: (1) Headquarters, (2) the Regional Base Team (BT), and (3) the Regional Site Team. At some phase of emergency response each of these organizations will have personnel assigned to cover

1. response management,
2. reactor safety assessment,
3. protective measures assessment,
4. safeguards/security assessment,
5. public and news media information,

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Table 1.2. Typical NRC actions during a severe nuclear plant accident[a]

Time (h)	Licensee	NRC Headquarters	NRC Regional Office	State/local authorities
0-1	Implements Emergency Operating Procedures (EOPs) Classifies event Activates emergency organization Implements/directs on-site protective actions and damage control Recommends protective actions to off-site officials Reports events to Headquarters (HQ) Conducts conference calls with Regional Office (RO) and HQ Activates Emergency Notification System (ENS) Staffs the Technical Support Center (TSC)	Decides to activate		Make protective action decisions Activate warning system Give public instructions
1-2	Activates the Emergency Operations Facility (EOF) Obtains first field monitoring results Staffs the Health Physics Network (HPN)	Operations Center (OC) is staffed Protective Measures Team (PMT) assesses initial licensee actions, and Reactor Safety Team (RST) assesses core and containment conditions RST assesses licensee event NRC criteria	Incident Response Center (IRC) is staffed Site Team (ST) leaves Regional Base Team (BT) continues to monitor situation, establishes counterpart with HQ OC, and begins to identify additional regional resources to be sent to the site and resources to be brokered by headquarters	Complete implementation of protective actions near the site for site Staff state and local centers

12

Table 1.2. (Continued)

Time (h)	Licensee	NRC Headquarters	NRC Regional Office	State/local authorities
		PMT completes very simple initial dose projections based on licensee release estimates (IRDAM computer code)		
		PMC contacts state to discuss technical information		
		If major differences exist in assessments, PMT contacts technical-level licensee and state to discuss		
		Official NRC recommendations from the Executive Team (ET)--only if actions required to protect the public are not being taken		
2-3	Analyzes first coolant and containment samples	PMT completes initial dose projections based on plant conditions and core damage estimates from RST (IDAS computer code)		State monitoring team arrives on site State representation arrives at the EOF
		PMT starts to interface with Atmospheric Release Advisory Capability (ARAC) (NRC provides source term estimate)		
		ARAC results integrated into HQ assessments		
4-8			ST arrives at EOF	
			Briefed by licensee	
8-12		ET delegates authority to Director of Site Operations (DSO) (expanded activation)	DSO-approved ST takes over lead for NRC	
		PMT and HQ support ST effort	All dose assessments/ protective action assessments coordinated directly (licensee/Office of Nuclear Reactor Operation/ off-site officials)	
		PMT and HC continue to support ST	Additional NRC personnel arrive	

[a]This listing does not necessarily reflect the sequence of events within a particular time heading. Many activities will be taking place concurrently.

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6. government coordination,

7. administrative support, and

8. response coordination.

In addition, Headquarters has personnel assigned to Congressional coordination.

Table 1.3 shows the titles of the individual team members responsible for each of these areas. In general, Headquarters has technical and liaison "teams," led by Directors or Officers, respectively, the Base Team has "managers," and the Site Team has "coordinators" assigned to each functional area.

Slide 8

1. The Regional Office Base Team is composed of 12 to 15 people, with 1 or 2 assigned to each function. During the Standby Mode, the Base Team will make critical contacts with the licensee and off-site officials and will direct the NRC response. Once NRC goes into the Initial Activation Mode with the authority for agency lead being at Headquarters, the Base Team will continue to monitor the situation and provide support to the Site Team. Figure 1.1 shows the Base Team organization. They will identify additional regional expertise and resources to be dispatched to the site and to be provided by Headquarters.

Slide 9

2. Headquarters is led by the Chairman of the Commission (or a designated Commissioner) as Director of the Executive Team. The Director is supported by teams for each function. Each team consists of up to 12 people and is supported by other

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Table 1.3. NRC response organizations responsible for control functions

Function	Headquarters (HQ) [Operations Center (OC)]	Regional Base Team (BT) [Incident Response Center (IRC)]	Regional Site Team
Management	Executive Team (ET) Director	Base Team Manager	Site Team Leader (STL)/Director of Site Operations (DSO)[a]
Reactor Safety Assessment	Reactor Safety Team (RST) Director	Reactor Safety Manager (RSM)	Reactor Safety Coordinator (RSC)
Protective Measures Assessment	Protective Measures Team (PMT) Director	Protective Measures Manager (PMM)	Protective Measures Coordinator (PMC)
Safeguards/Security Assessment	Safeguards Team (SGT) Director	Safeguards/Security Manager (SM)	Safeguards/Security Coordinator (PMC)
Public and News Media Information	Public Affairs (PA) Officer	Public Affairs Manager (PAM)	Public Affairs Coordinator (PAC)
Government Coordination	Government Liaison Officer (GLO)	Government Liaison Manager (GLM)	Government Liaison Coordinator (GLC)
Administrative Support	Administrative Support Team (AST) Director	Resource Manager (RM)	
Response Coordination	Response Coordination Team (RCT) Director	Emergency Response Manager (ERM)	Emergency Response Coordinator (ERC)
Congressional Coordination	Congressional Liaison (CL) Officer		

[a]The STL becomes the DSO on the transfer of authority and responsibility (declaration of Expanded Activation).

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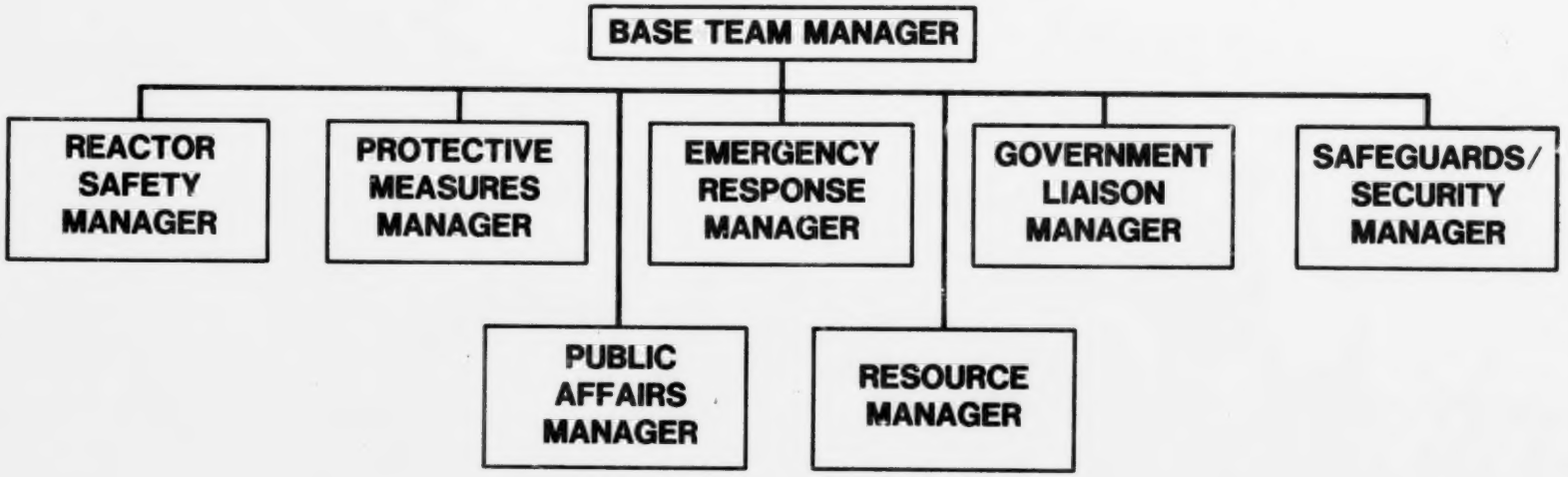

Fig. 1.1. Typical organization of the Base Team.

Headquarters offices and by designated national laboratories. Figure 1.2 shows the Headquarters organization.

Slides 10 and 11

3. The initial Site Team consists of about 15 people, supplemented as soon as possible according to the nature of the event and situation. Typically, each major functional area is represented initially by only one person, a Coordinator. (The typical Site Team organization is shown in Fig. 1.3.)

The initial team will be expanded within 24 to 48 hr to enhance coverage of functional areas as well as to provide all response facilities with liaison personnel as appropriate. Depending on the event and situation, this may result in an expanded Site Team of approximately 50 per shift as indicated in Fig. 1.4.

1.6.1 Response Management

Slide 12

The primary roles of response management are to direct the NRC response and act as the primary spokesperson.

It is important to note that, although NRC should have no direct role in implementation of early predetermined actions, it is recognized that NRC may be asked to confirm a decision or recommendation. Delay in responding to such a request could delay implementation of a crucial action. The NRC spokesperson should at least be prepared to say, "NRC has no information to indicate that the recommendations made by the licensee or the actions being considered by off-site officials are not appropriate."

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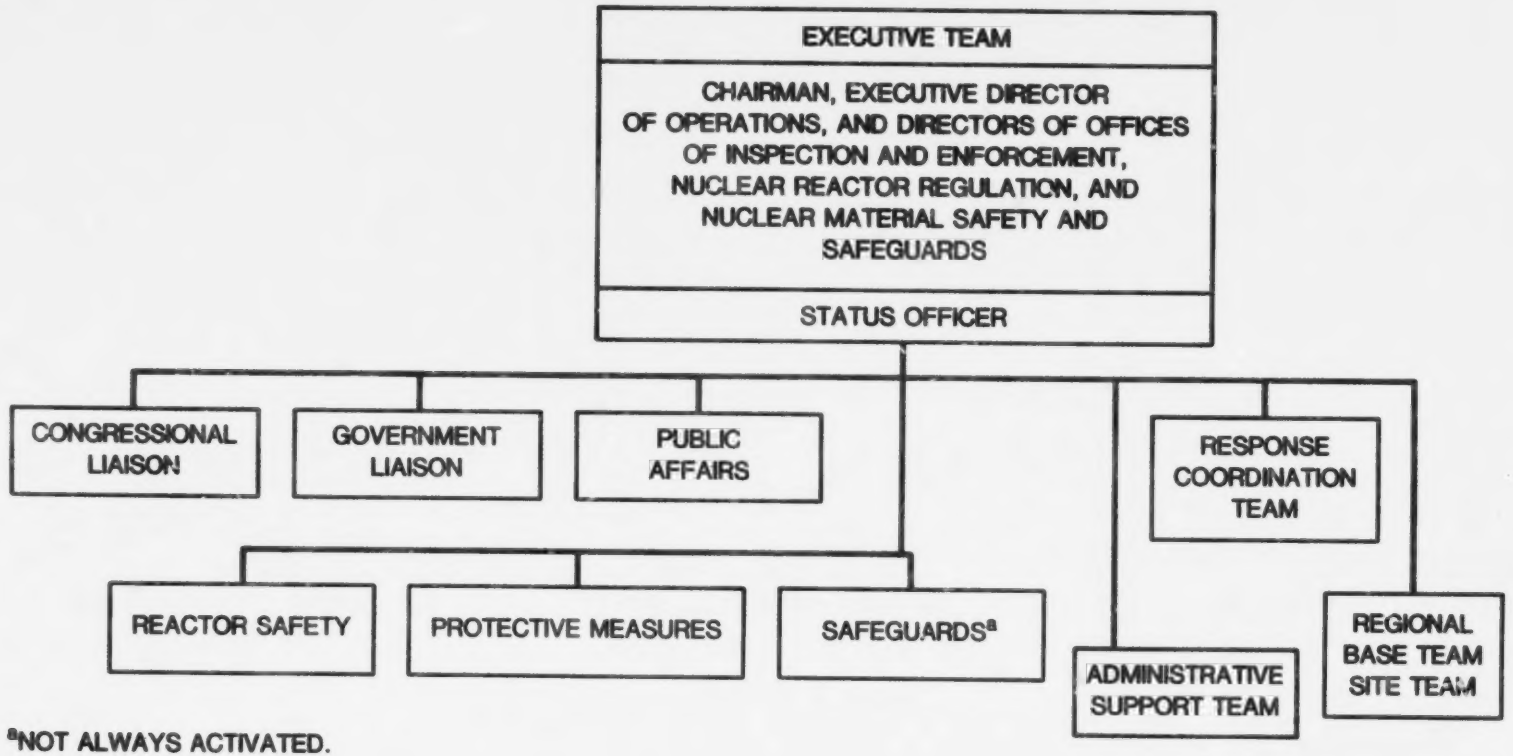

Fig. 1.2. Organization of NRC Headquarters (lead during initial activation).

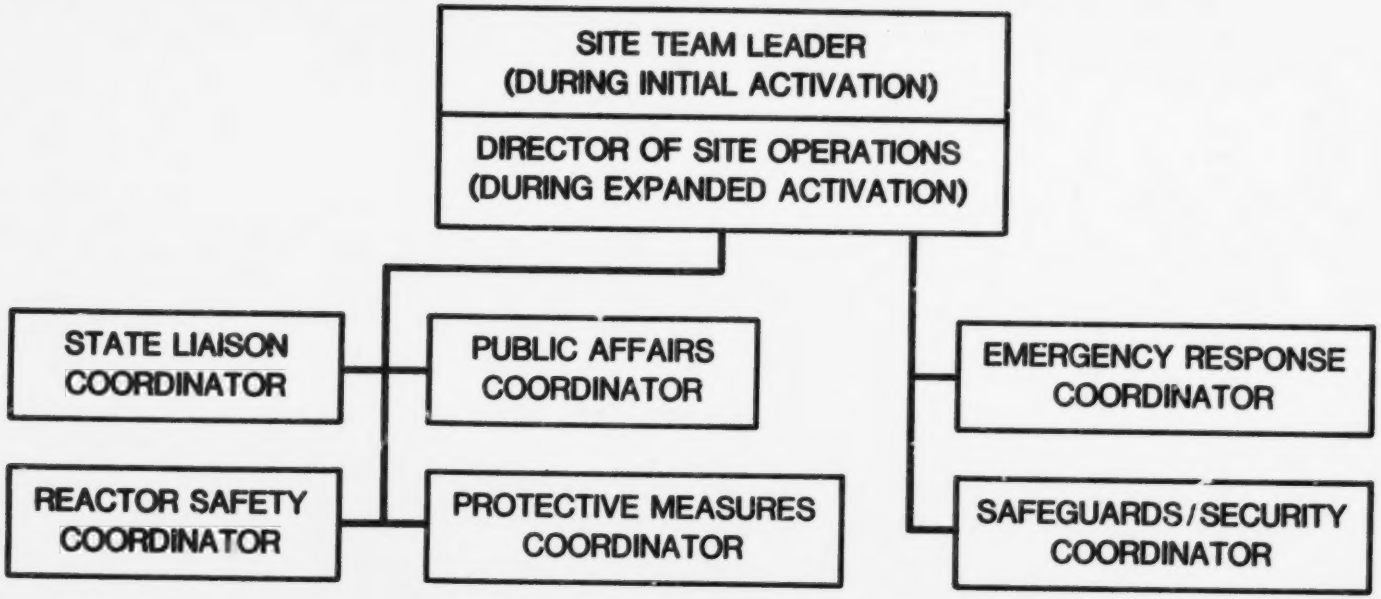

Fig. 1.3. Typical organization of the Site Team (lead during expanded activation).

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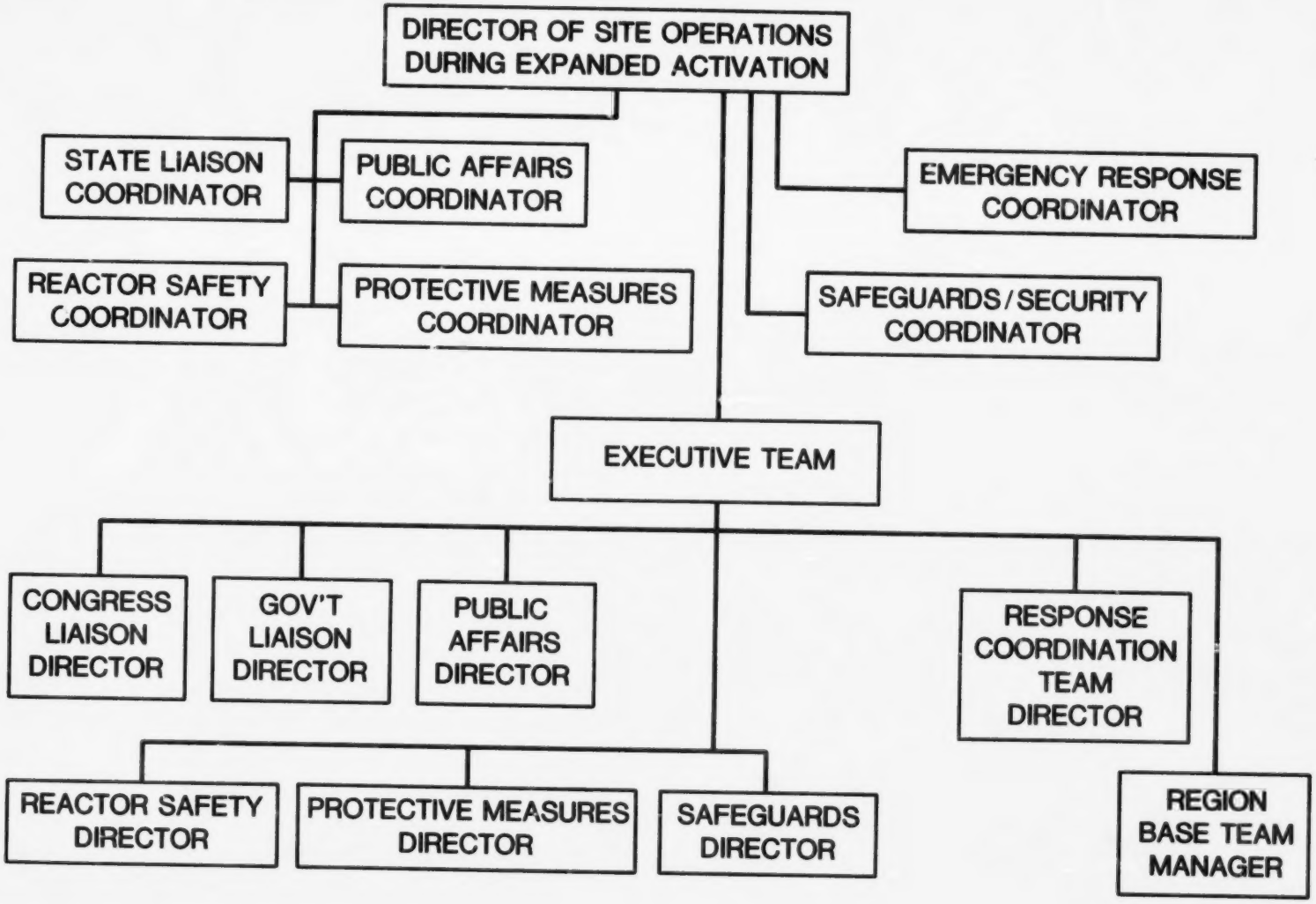

Fig. 1.4. Expanded activation Site Team organization chart.

They (response management) should recognize that NRC should issue recommendations only if required. This means that NRC adequately understands the situation and feels strongly about a differing opinion. Since many of the response actions have been predetermined, minor NRC recommendations or questions would delay implementation of the predetermined actions and should be avoided.

The Executive Team Director or Director of Site Operations must be assured that all information has been fully coordinated with all affected parties (e.g., off-site officials) before its release. The release of conflicting information could confuse the public and interfere with an effective response.

Slide 13

Some authority and responsibility may be transferred to the Director of Site Operations by the Executive Team Director:

- authority to recommend actions to the licensee;
- authority to recommend off-site actions, either confirming licensee recommendations or providing additional NRC recommendations;
- authority to direct the licensee to take specific actions--but only in rare and unusual circumstances;
- responsibility to act as the primary spokesperson for NRC in responding to the media;
- authority to supervise all NRC personnel at the site; and
- authority to represent NRC in interactions with other agencies.

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Before making this decision, the Executive Team has to determine that a Site Team has been deployed and all functions are covered, the Site Team has been briefed by the licensee, and the Site Team leader is ready to assume the responsibilities of the Director of Site Operations.

Slide 14

It is very important that the decision makers have adequate information to support their role. This includes information about:

- significant developments;
- assessments of all parties:
  - licensee,
  - state,
  - other Federal agencies, if available,
  - other industry experts, if available, and
  - staff (assessments that bound the conditions and uncertainties);
- bases and significance of differences in assessments;
- limitations and degree of sensitivity of the analysis;
- recommendations and options:
  - input about actions currently being taken,

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- basis; and

* proper contacts [i.e., the people in charge of various functions (e.g., protective action decision making)].

It is the responsibility of the various teams or coordinators to provide integrated briefings that include options, recommendations, and their bases. To avoid conflicts, the assessments must include input from the licensee and off-site officials. In addition, the assessments must attempt to bound the range of possibilities. Emergency response is not exact, and the results must demonstrate and account for these uncertainties.

Although the other four Commissioners are notified of Operations Center activation, they have no predetermined responsibilities in an emergency. Instead, they are kept informed so that they may assist the Director if requested. Congress has authorized that, in an emergency, the Chairman or his designate is the single decision maker for the NRC for that emergency.

1.6.2 Reactor Safety Assessments

Slide 15

The individuals assigned to reactor safety must assess the condition of the core, containment, and other engineered safety features (ESFs) to (1) provide core and containment projections to those assessing the protective measures, (2) provide estimates of core damage and possible release pathway information to allow bounding of possible off-site consequences (doses), and (3) assess the system-related accuracy of the event classification by the licensee. These assessments must first be

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discussed with the appropriate licensee staff before they are forwarded to those in response management. These individuals attempt to describe (1) plant conditions and (2) where the accident may be going in terms of failures that could result in off-site consequences. As discussed in Vol. 2, they evaluate the status of the core and containment because serious damage would lead to major off-site consequences, requiring protective action implementation. Their assessments form the basis for protective measures assessments. These individuals should also assess the accuracy of the licensee's classification because, as discussed in Vol. 3, a correct classification indicates that the licensee recognizes the safety significance of the event, which is essential to implementing an appropriate response.

1.6.2.1 Reactor Safety Assessment Objectives

The objectives of the reactor safety assessments are to

1. develop NRC assessments (and/or confirm the licensee's assessments) of current and projected core and containment conditions;

2. monitor licensee response [e.g., implementation of Emergency Operating Procedures (EOPs)] to ensure that proper corrective actions are being taken to minimize the consequences of the accident;

3. characterize possible core conditions and release pathways for the protective measures dose assessment; and

4. furnish these assessments to those in response management with advice and direction for the licensee, if appropriate.

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Slide 16

1.6.2.2 Reactor Safety Assessment Methods

Those responsible for reactor safety ensure that the licensee has identified any damage to the core and containment and has made a reasonable projection of the condition of these systems. These assessments form the foundation for the protective measures assessments. They look for direct indication of core damage (e.g., radiation levels, water levels, and temperature) and conduct emergency mass and energy balance calculations to assess trends that could lead to core damage. They also attempt to identify likely release pathways and levels of core damage (based on temperature projections) to be used in protective measures dose assessment.

1.6.2.3 Reactor Safety Assessment Limitations

Slide 17

It is very important that Headquarters and the Base Teams understand their limitations and inform their management of the uncertainties in their analyses. Until the Site Team arrives, Headquarters and the Base Team must rely on telephone contacts for information from the licensee. Information may not be current, and the amount of information available from the licensee is limited. In addition, they are not as familiar as the licensee with specific plant equipment and conditions.

Slide 18

1.6.3 Protective Measures Assessment

Those responsible for protective measures assessments evaluate the adequacy of the protective measures being recommended by the licensee and being implemented by off-site

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officials. They either confirm the licensee's recommendations or, if appropriate actions are not being taken to protect the public, make recommendations to response management.

They have the responsibility to pull together all available information related to possible off-site consequences and to determine if adequate protective actions are being recommended by the licensee and are being implemented by off-site officials. They should monitor the implementation of protective action criteria and plans in the existing licensee plans and procedures. Assessments for a severe accident are first based on the reactor safety assessments of core and containment condition to assess the need for immediate protective action in accordance with the concepts discussed in Vol. 4. Those responsible for protective measures assessments may also attempt to bound the possible off-site doses. Discussions with licensee and state radioactive health counterparts are included in their assessments (see Sect. 1.9).

In addition, they will ensure that an interface is established with other appropriate federal agencies (e.g., the Department of Energy, the Environmental Protection Agency, the Department of Agriculture, and the Food and Drug Administration) to obtain their respective technical inputs and to utilize their expertise; this interface is coordinated through the Government Liaison personnel.

1.6.3.1 Protective Measures Assessment Objectives

The objectives of the protective measures assessments are to

1. monitor the licensee's implementation of emergency plans and procedures to assess and confirm the licensee's public protective action recommendations;

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2. obtain the status of protective actions implementation by off-site officials;

3. assess and confirm the on-site protective actions taken by the licensee;

4. exchange technical information with the licensee and state and local agencies to evaluate the significance of any differences; and

5. provide independent protective action assessments based on reactor status and dose analyses and evaluate external (licensee, state, local, and other agency) assessments for response management. In particular, those responsible for protective measures assessments must ensure that an immediate (within 15 min) assessment is provided for any licensee protective action recommendation or for any conditions that indicate that protective actions are warranted.

1.6.3.2 Protective Measures Assessment Methods

Assessments of protective actions are conducted at several levels. First it is ascertained that provisions are in place (procedures or actions are being implemented) if immediate action is warranted based on current or projected core conditions (see Vol. 4). Once this is completed, independent dose assessments are conducted. These results are compared and discussed with the licensee and off-site officials. These dose assessments consider projected or actual levels of core damage and release pathways (based on reactor safety assessments and not on licensee estimates of releases). The calculations conducted at the site by the Protective Measures Coordinator (PMC)

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are based on licensee release estimates and use a straight-line transport model. The Protective Measures Coordinator, however, may request the Headquarters Protective Measures Team (PMT) to perform its analysis and to provide an assessment using the tools available at Headquarters. If all other tools are unavailable, sets of precalculated dose curves for severe accidents are used.

Slide 19

The specific roles of dose projections during an accident are to determine if protective actions based on plant conditions should be expanded and to identify potential areas that should be monitored for ground contamination. Recognizing the great uncertainties in dose assessments, NRC will not normally question the licensee's off-site dose assessments if they are within an order of magnitude (factor of 10) of their estimates unless the results will have a major influence on protective measures.

1.6.3.3 Protective Measures Assessment Limitations

Slide 20

NRC must recognize the considerable limitations involved in performing their functions. Until the Site Team arrives, they must rely on telephone contacts for information from the licensee and off-site officials. In addition, they are not as familiar as the licensee with the specific plant, equipment, response plan, and conditions. They must consider these limitations and should give their management an indication of their confidence levels. The assessments should attempt to encompass these uncertainties, in particular those associated with predicting accident sequences, source terms, and transport.

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Slide 21

1.6.4 Safeguards/Security Assessment Functions and Objectives

The primary safeguards/security functions are to evaluate each event for safeguards (security) and law enforcement significance and to coordinate with appropriate federal law enforcement agencies [e.g., the Federal Bureau of Investigation (FBI)].

Safeguards/security objectives are to

1. advise the Executive Team or Director of Site Operations about security and safeguards developments and recommend appropriate actions;

2. provide safeguards information to appropriate law enforcement agencies (including the FBI) and coordinate efforts for evaluating appropriate remedial actions; and

3. give decision makers plant-specific information and analysis concerning the safeguards contingency plan.

1.6.5 Government Liaison Functions and Objectives

Slide 22

Those responsible for government liaison interface with outside interested individuals and groups to ensure that these persons are aware of the NRC knowledge of the status of the event and that they understand any actions that may be taken to mitigate the event.

At the Headquarters Operations Center, the Government Liaison Officer (GLO) ensures that a number of federal agencies which have a direct interest in the radiological aspects of the emergency are notified and kept informed of the status of the event and response (i.e., Federal Emergency Management Agency,

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Department of Energy, Environmental Protection Agency, Department of Health and Human Services, and Department of Agriculture). The Federal Emergency Management Agency, in turn, notifies a number of other Federal agencies which also might have an interest in the incident. As federal representatives of the technical agencies arrive at the Operations Center, the Government Liaison Officer, in cooperation with the Protective Measures Team, ensures that they are briefed and that their respective technical expertise is considered in Protective Measures Team assessments. As noted in Sect. 1.8.2, some federal agencies will continue to direct their operations from Washington or make agency decisions at their national headquarters. Therefore, the Headquarters Government Liaison Officer will continue to support the Site Team after entering Expanded Activation by coordinating with those agencies that operate from Washington. The Government Liaison Officer is also responsible for contacting the governor's office(s) of affected states to ensure that they are aware of NRC actions. The Protective Measures Team also contacts the state, usually the radiological health group, while the Government Liaison team interacts with the emergency services agency, but at a technical level. Therefore, the Government Liaison Officer must work closely with the Protective Measures Team. If an event progresses through Standby, the Base Team Government Liaison Manager (GLM) may have already contacted some state and federal agencies. Consequently, the Government Liaison Officer and the Government Liaison Coordinator (GLC) must coordinate their notification and updates if the response goes to Initial Activation.

At the site, the principal functions of the Government Liaison Coordinator are to contact and coordinate with state and local officials who have authority and responsibility for protective action decision making and to interface with Federal

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agencies at the incident scene. This will aid in establishing contact between the Director of Site Operations and these officials in the event the Director of Site Operations needs to make (or concur in) a protective action recommendation and will keep the Director of Site Operations informed of the actions of the other Federal agencies. It is expected that, at the scene of the incident, the Federal agencies and off-site authorities will establish emergency centers where the Government Liaison Coordinator should send liaisons:

- State Emergency Operations Center,
- Federal Radiological Monitoring and Assessment Center (see Sect. 1.8), and
- Federal Response Center.

The Government Liaison objectives are to

1. inform state and other federal organizations of the status of the NRC response;
2. coordinate with other federal agencies responses related to on-site activities (see Sect. 1.8);
3. keep federal and state agencies informed (this includes establishing contact with the state and off-site protective action decision makers and keeping abreast of their considerations in the event that the NRC decides to make or discuss protective action recommendations); and
4. brief response management on the status of other agency responses.

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1.6.6 Congressional Liaison

Slide 23

The responsibilities of the Congressional Liaison (CL) (at Headquarters only) in the event of a major incident are to provide adequate, accurate, timely, and consistent information regarding the incident to members of Congress and their staff and to principal Congressional oversight committees. Communications to and from Congress are channelled through the Congressional Liaison. All Congressional interfaces will be conducted at Headquarters. No one is assigned to the function on the Base Team or Site Team. This is a role delegated to the Federal Emergency Management Agency once the Federal Response Center is established.

1.6.7 Public Affairs Functions and Objectives

Slide 24

Those responsible for public affairs ensure that the public and media are kept informed of the course of the event and NRC actions. They also ensure that information is coordinated with the licensee, state and local government, and other federal agencies before its release. The Headquarters team prepares and coordinates releases of information during Initial Activation and supports the Site Team and addresses Washington media requests during Expanded Activation.

At the site, provisions have been made to have an NRC Public Affairs (PA) representative at the licensee media center. Additional Public Affairs support is provided by other regions and at the Emergency Operations Facility through the Director of Site Operations.

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The Public Affairs objectives are to

1. prepare and coordinate information releases;

2. support response management;

3. monitor national media coverage; and

4. keep the public and media informed of NRC actions.

1.6.8 Response Coordination Functions and Objectives

The Regional Base Team has an Emergency Response Manager who provides guidance and support to the Base Team members. This individual ensures the proper setup and staffing for the Regional NRC Incident Response Center, ensures that procedures are implemented, and coordinates the deployment and logistical support for the Site Team.

For each Headquarters Response Team (e.g., the Protective Measures Team), a Response Coordinator has been assigned who is responsible for ensuring the continued readiness of his or her response organization. This includes personnel training, analysis, and development and logistics. The Headquarters Coordinators form the Response Coordination Team during an event and are responsible for initial notifications and start-up of the Operations Center. The Headquarters Coordinators then support their teams as needed.

The regional Emergency Response Coordinator (ERC) accompanies the Site Team, ensuring that the team's logistical needs are met. The Emergency Response Coordinator also acts as an advisor and facilitator during the response by assisting the Director of Site Operations in all aspects of emergency response and ensuring that procedures are implemented.

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1.7 ROLE OF THE RESIDENT INSPECTOR

Slide 25

The Resident Inspector (RI) will be the first NRC representative at the site. Initially, the Resident Inspector will assist the Executive Team and Base Team in evaluating the incident conditions and licensee actions including classification. This information has a direct bearing on appropriate NRC response mode. Early in the event, the NRC Regional Administrator or the Executive Team Director (e.g., the Chairman) may want to consult the Resident Inspector concerning the licensee's actions. The Resident Inspector should remain in the Control Room (CR) or the Technical Support Center (TSC) to stay abreast of the reactor status until the Site Team arrives.

The Resident Inspector should <u>at no time</u> be put in the position of replacing the licensee's communicator on the Emergency Notification System. If no commercial telephone lines are available, the Resident Inspector may need to use the Emergency Notification System, for a brief period of time, to brief NRC's response management. The Resident Inspector must be able to stand back, watch, and analyze the event as it progresses. Until the regional Site Team arrives, the Resident Inspector represents NRC at the site. When this team arrives, the Resident Inspector briefs the team members and then follows directions given by the Site Team leader.

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1.8 ROLES OF OTHER FEDERAL AGENCIES

Slides 26 through 28

1.8.1 Federal Radiological Emergency Response Plan

The Federal Radiological Emergency Response Plan defines the federal response role in support of state and local agencies. It was published in the Federal Register on November 8, 1985. Under this plan, four agencies have major roles defined for nuclear power plant accidents. The first is the Cognizant Federal Agency (CFA). The NRC would be the Cognizant Federal Agency for an event at any licensed nuclear reactor in the United States. The Cognizant Federal Agency is responsible for dealing directly with state agencies and for all technical assessments of the accident and for coordinating with other responding Federal agencies.

Under the Federal Radiological Monitoring and Assessment Plan (FRMAP) portion of the Federal Radiological Emergency Response Plan, the Department of Energy is responsible for coordinating all off-site federal radiological monitoring assistance. The Department of Energy will establish a Federal Radiological Monitoring and Assessment Center (FRMAC) to coordinate the collection and assessment of field monitoring efforts. The Department of Energy will also provide field and airborne monitoring assistance. The Radiological Survey Team will generally be called out as a result of requests from the state(s) or licensee. This could also be done by NRC Headquarters requesting assistance through Department of Energy Headquarters or by the region through the Department of Energy Regional Coordinating Office. The consolidated field monitoring information and assessments will then be made available by DOE to the state, the Cognizant Federal Agency, and other responders at the Federal Radiological Monitoring and Assessment Center.

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After the situation has stabilized and the accident moves out of the emergency phase, the Environmental Protection Agency (by agreement with the Department of Energy) assumes the role of coordination of federal off-site radiological monitoring assistance. The Department of Energy and the Environmental Protection Agency together are also an important source of radiological monitoring capabilities and technical assistance for the state(s) and the Cognizant Federal Agency. Normally, NRC does not separately request Environmental Protection Agency radiological monitoring assistance; the Department of Energy and the Environmental Protection Agency have established arrangements for requesting Environmental Protection Agency assistance.

The fourth agency is the Federal Emergency Management Agency, which coordinates all federal nonradiological assistance in support of the state(s). If NRC needs support from other federal agencies for which there are no arrangements or established relationships, the Federal Emergency Management Agency will be asked to seek that support. The two primary examples are (1) communications, transportation, and other logistical support from the U.S. Department of Defense (DOD) and (2) logistical support for the licensee where the source of that support or resource is not apparent.

In initial activation, requests should go from the Government Liaison Officer to the Federal Emergency Management Agency at their Emergency Information Coordination Center to their liaison officer (LNO) once he or she arrives at the Operations Center. In expanded activation, requests should go from the Director of Site Operations through the NRC Operations Center to the Federal Emergency Management Agency, or directly to the Senior FEMA Official if he has arrived at the site. In any case, the requesting official should obtain periodic updates on the status of requests.

Any substantial request for resources should be cleared with the Executive Team, keeping in mind that Department of Defense costs for air transport can be in excess of $5,000/hr.

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These costs will be billed to NRC in an incident where there is no Presidential declaration, but this should not be a deterrent in cases where such resources are essential to ensuring that the public health and safety are being protected. Once the federal response is in place, the Federal Emergency Management Agency and the Cognizant Federal Agency will coordinate all federal public information activities with the state and licensee, preferably through a Joint Information Center (JIC). This role will probably be delegated by the Director of Site Operations to the Senior FEMA Official. The roles of other federal agencies during an emergency response are summarized in Table 1.4. The organizational structure at the site during the first few days of a response is shown in Fig. 1.5. The typical activities of other federal agencies as a function of time are shown in Table 1.5.

Several of the federal agencies (e.g., the Environmental Protection Agency and the Department of Health and Human Services) will send to the Headquarters Operations Center representatives who have considerable technical expertise in assessing radiological consequences. The Protective Measures Director must coordinate actions with other Federal responding agencies and make full use of the expertise they represent.

1.8.2 Location of Federal Agency Decision Makers/Coordinator

Slide 29

Table 1.6 summarizes the locations from which the various agencies will direct their respective activities. Most agencies will attempt to direct their efforts from locations close to the site. Two major centers will be established for coordinating

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Table 1.4. Roles of federal agencies during an emergency response

Agency	Role during an emergency
Nuclear Regulatory Commission [Cognizant Federal Agency (CFA)]	Coordinates technical evaluation assessment
Federal Emergency Management Agency (FEMA)	Off-site logistical response
Department of Energy (DOE)	Coordinates off-site monitoring and data evaluation
	Provides technical assistance
	EG&G and Atmospheric Release Advisory Capability (ARAC)
Department of Health and Human Services (HHS)	Assists with protection of human health
	Provides technical and nontechnical assistance
Department of Agriculture (USDA)	Assists in the development of agricultural protective measures and damage assessments
National Oceanic and Atmospheric Administration (NOAA)	Provides meteorological services as required
Department of Housing and Urban Development (HUD)	Assists with location of housing, if required
Department of the Interior (DOI)	Responsible for federal lands, parks and natural resource facilities
Department of Transportation (DOT)	Can assist with location and coordination of transportation resources
National Communication System (NCS)	Can provide communications support to federal agencies

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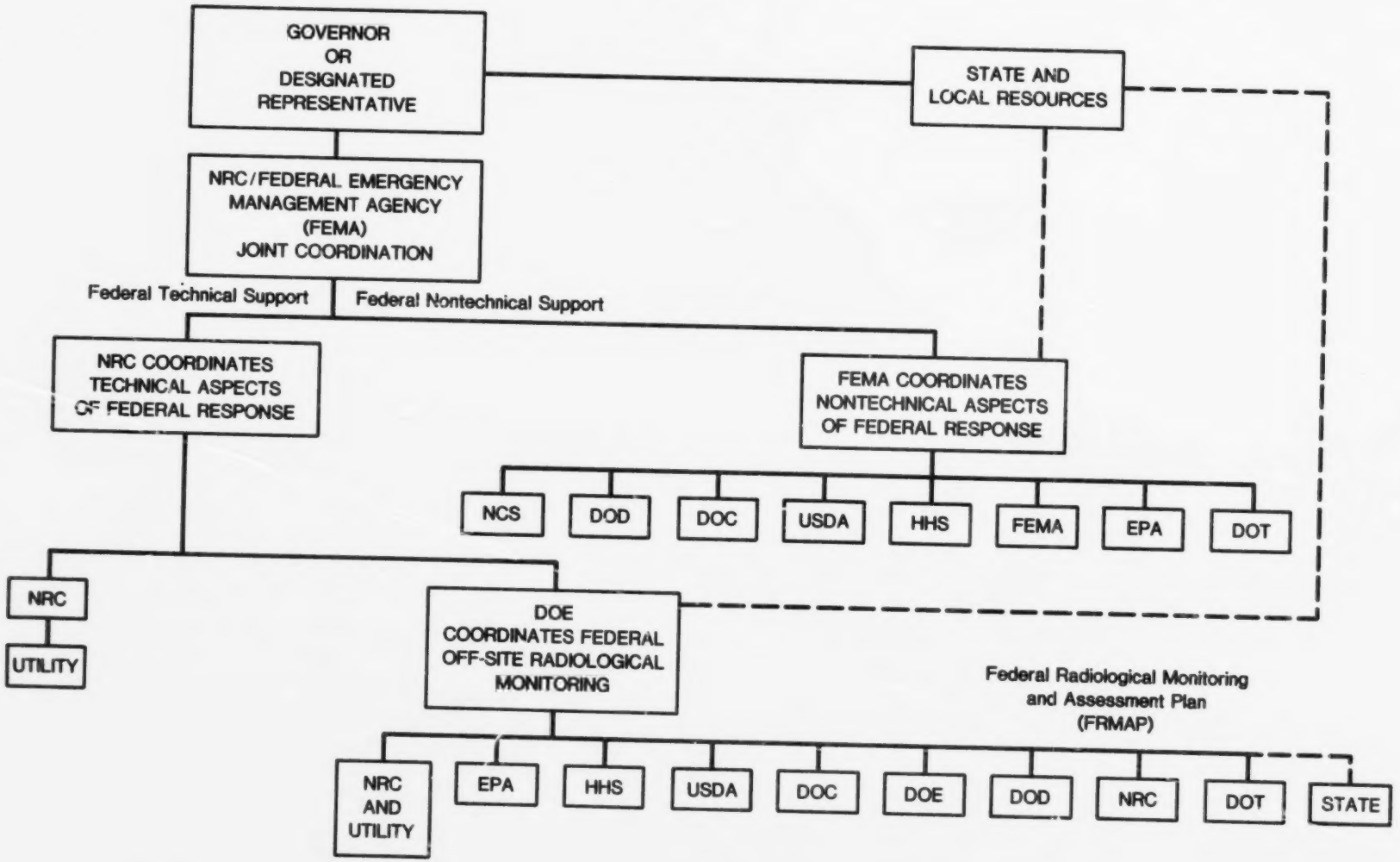

Fig. 1.5. Federal response management for a radiological emergency at a nuclear power reactor.

39

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Table 1.5. Activities of typical federal agencies other than NRC following initiation of the Federal Radiological Emergency Response Plan

Federal agency	Response role	Estimated No. of responders	Estimated time of arrival on site (h)	Personnel and/or equipment
Nuclear Regulatory Commission (NRC)	Monitors licensee's actions	50-70	2-6	15-20
	Coordinates federal technical response		6-24	50-70
	Provides support to licensee and off-site authorities			
	Assesses protective action recommendations and actions			
Department of Energy (DOE)	Radiological Assistance Teams (RATs)	6-10	1-5	
	Monitoring support to state			
	Aerial Measurements Systems (AMS)	100-150	8-12	Aerial support (planes or helicopters)
	Establishes Federal Radiological Monitoring and Assessment Center (FRMAC)			
	Coordinates initial off-site monitoring; assists in monitoring		6-12	
Federal Emergency Management Agency (FEMA)	Coordinates nontechnical off-site support to off-site authorities	10-20	6-12	Regional Office
	Provides logistical support for federal agencies		8-16	Senior FEMA Officer (SFO)
Environmental Protection Agency (EPA)	Provides analytical radiological measurements support	20-25	6-10	Advance team
	Coordinates long-term off-site monitoring		8-16	Mobile laboratory

40

Table 1.5. (Continued)

Federal agency	Response role	Estimated No. of responders	Estimated time of arrival on site (h)	Personnel and/or equipment
Department of Health and Human Services (HHS)	Provides medical and radiological assistance and advice and ensures availability of human services	2-4	8-16	
Department of Agriculture (USDA)	Provides radiological advice on food products	4-6	2-10	
Department of Transportation (DOT)	Provides transportation advice and assistance to state and local authorities	1-2	6-10	
National Communication System (NCS)	Manages communications assets and assists in solving communication problems for federal agencies	2-4	6-10	
Department of Commerce (DOC)	Provides meteorological information and resources		As requested [National Weather Service (NWS) offices are continuously staffed]	
Department of Defense (DOD)	Provides logistical and radiological assistance		As requested	

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Table 1.6. Location of federal agency decision makers

Agency	Location of decision makers[a,b]			
	Licensee Emergency Operations Facility	Federal Response Center	Federal Radiological Monitoring and Assessment Center	Headquarters (in Washington, D.C., NRC Operations Center)[c]
Department of Energy (DOE)			(X,C,M)	
Environmental Protection Agency (EPA)			X,C,M	P,R
Department of Health and Human Services (HHS)				P,R,M
Department of Agriculture (USDA)		P,R		
Federal Emergency Management Agency (FEMA)		P,R,SFO		
Nuclear Regulatory Commission (NRC)	(P,R,X,C)		M	

[a]The agency in the lead for a respective function is indicated by parentheses.

[b]M = field monitoring measurements; P = protective action assessment; R = reentry (relocation and resettlement) assessment; C = dose calculations (per hour); X = dose commitment (per hour); SFO = senior FEMA official.

[c]After an agency's representative arrives at the NRC Operations Center, information will flow to and from that agency.

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off-site federal activities:

1. Federal Radiological Monitoring and Assessment Center - a center from which the Department of Energy coordinates radiological monitoring and assessment operations, typically at an airport near the accident site. This center generally need not be located near the on-site or federal-state centers as long as its operations can be coordinated with them.

2. Federal Response Center (FRC) - a center established by the Federal Emergency Management Agency at a location identified in conjunction with the state; it serves as a focal point for coordinating federal logistical and nonradiological support to the state.

For some agencies (e.g., the Department of Health and Human Services), policy decisions will be made from Headquarters in Washington, D.C.

1.9 OFFICIAL NRC POSITION

Slide 30

1.9.1 Information Status

The NRC will issue Status Summary Reports from either the Operations Center or the site for use by NRC Response Team members. These reports will be the official NRC information concerning its assessment. Any information not contained in a Summary Status Report or official press release should not be considered official.

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1.9.2 Licensee Interface

There are generally two levels of contact with the licensee: (1) a technical level to discuss plant systems status as it pertains to the event and to discuss the basis for protective action decision making and (2) a management level to discuss assessments and recommendations for actions both on and off site.

1.9.2.1 Technical Data

Slides 31 and 32

The NRC has a dedicated Emergency Notification System phone line to each plant. Initially (in the first 1 to 2 h after the incident), the NRC will receive basic information concerning what happened when and where. This information will normally be obtained by the Headquarters Operations Officer over the Emergency Notification System. The status and parameters of plant systems should be transmitted to the NRC over the Emergency Notification System (both the Regional Office and Headquarters will be manning the line).

The NRC also has the Health Physics Network (HPN) phone line to the plant. Initially, protective action, radiological, and meteorological information is transmitted over the Emergency Notification System. This information should be restricted to the Health Physics Network once it is manned by a qualified person, which is generally by the time the Emergency Operations Facility is fully staffed.

The licensee can expect NRC to request the following types of technical information:

1. those items that will be requested initially and that should be updated only if there is a major change:

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a. a description of the abnormal occurrence (including time of occurrence), corrective actions, and/or projected degradation (identify the major indicators on which this assessment is based);

b. core condition and projection (identify the major indicators on which this assessment is based);

c. containment condition and projection (identify the major indicators on which this assessment is based);

d. protective actions recommended to off-site authorities, the basis for such actions, and the off-site official contacted; and

e. names and phone numbers of:

(1) Technical Support Center Manager/Director <u>(to discuss licensee assessment of plant conditions),</u>

(2) Emergency Operations Facility (EOF) Manager/Director <u>(to discuss overall response),</u> and

(3) Protective Actions/Radiation Manager/Director <u>(to discuss the bases and status of protective action recommendations);</u> and

2. parameters that NRC expects will need updating every 30 min for most accidents (e.g., see Table 1.7). In addition, specific questions concerning plant status may be asked over the Emergency Notification System and Health Physics Network.

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Table 1.7. Typical parameters that NRC expects to be considered for a light-water reactor incident [a]

System/Network	Information
Emergency Notification System	Reactor vessel liquid level (if available)
	Reactor coolant pressure
	Hot-leg temperature [pressurized water reactor (PWR)]
	Cold-leg temperature (PWR)
	Pressurizer level (PWR)
	Steam generator level (PWR)
	Engineered Safety Feature system status
	Drywell pressure [boiling water reactor (BWR)]
	Suppression pool water temperature (BWR)
Health Physics Network	Abnormal radiation levels from sampling or monitors
	-- Coolant (primary or secondary)
	-- Containment
	-- Air ejector exhaust (PWR)
	-- Standby and off-gas treatment (BWR)
	-- Area
	-- Process
	-- Environmental
	Meteorological information
	-- Weather conditions
	-- Wind conditions
	-- Atmospheric stability

[a] The NRC Operations Center would need this information on a regular basis (every 30 min) for any incident. Additional items may be added during the course of the response to an incident.

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1.9.2.2 Discussion of Assessment

As was described earlier, Headquarters and the Base Team will attempt to discuss their assessment with the licensee. This contact is arranged during the Emergency Notification System or Health Physics Network conversations. The individuals responsible for reactor safety assessments and protective measures assessments are given the names and means to contact the licensee representatives with whom they can discuss their respective assessments. NRC will also request over the Emergency Notification System the name and means to contact the appropriate senior-level licensee representative with whom the Executive Team Director or Base Team Leader can discuss the situation.

1.9.3 State/Local Interfaces

There are two levels of contact with off-site officials:

1. a technical level to discuss the basis for protective actions (e.g., dose assessment) between technical groups (NRC/off-site) and

2. a decision-making level to discuss assessments and possible recommendations.

Once the Site Team arrives on site, it is highly desirable for this contact and coordination to be face-to-face.

To clarify protective action recommendations and discuss the basis for any differences of a technical nature, the individuals responsible for protective measures will be contacting the off-site officials responsible for technical analysis of the protective action recommendations (e.g., the state radiation health office). They cannot officially represent the NRC's position or recommendation to the state decision maker. Contact with the state or local decision makers will be initiated by the

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Government Liaison Officer or Government Liaison Coordinator. This will allow the Executive Team or Director of Site Operations to provide the official NRC assessments or recommendations to the appropriate off-site officials. The purpose is to ensure that off-site decision makers are aware of NRC's activities and that any off-site actions are factored into NRC analysis and, where necessary, to allow response management to discuss NRC's assessment with these officials. These discussions will generally be with the Executive Team Director or Director of Site Operations, who will provide the "official" NRC assessments or recommendations.

The NRC Regional Offices and Headquarters maintain a list of (1) off-site officials with whom the NRC should discuss and compare technical assessments and (2) officials responsible for protective action decision making who should be contacted to receive official NRC assessments and recommendations. Once the Site Team is on site and a Director of Site Operations has been designated, these contacts may be face to face.

1.9.4 Internal NRC Interface

To ensure a coordinated response, communication links will be established by the Headquarters Operations Officer between the Site, Base, and Headquarters teams and management of the Protective Measures Team and Reactor Safety Team. These lines, which will be used to discuss team assessments and assignments, will be kept open and will be manned continuously. To establish these lines, all parties must call the Headquarters Operations Officer over the Health Physics Network or Emergency Notification System and request to be placed on either the Protective Measures Team or Reactor Safety Team conference links or bridges.

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1.10 MAJOR POINTS

Slide 33

- The principal roles for NRC in incidents at nuclear power plants are to monitor actions by the licensee to ensure that people in the vicinity of the plant are adequately protected and to provide any assistance requested by the licensee or off-site officials.

- NRC response procedures for serious events are geared toward establishing the lead and focus for NRC response at the site as soon as possible.

- During an emergency, the Chairman or his designee has the authority of the Commission; only one person is in charge.

- Once the Director of Site Operations has been designated, the lead for NRC is at the site, and the response teams at NRC Headquarters work for and support the Site Team.

- NRC will not normally question licensee or off-site dose assessments if they are within an order of magnitude of NRC assessments unless the assessments have a major influence on protective measures.

- All response team members must recognize the considerable limitations of performing their functions and provide their management with an assessment of how good their analyses are.

- The Resident Inspector will generally be the first NRC staff member at the site and is the NRC person most knowledgeable about the site.

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- The Federal Emergency Management Agency is responsible for coordination of the federal nonradiological response to emergencies that require a significant multiagency presence. NRC is responsible for coordinating the technical aspects of any federal response involving NRC-licensed activities.

- Response personnel should discuss their assessments with the licensee before forwarding them to the Executive Team or Director of Site Operations.

- All "official" NRC recommendations to off-site officials will be made by the Director of the Executive Team (Chairman) or Director of Site Operations.

- The Status Summary will contain official, approved information that can be released to anyone. Although there will be numerous working-level exchanges of information with the licensee and off-site counterparts, these other discussions will be "unofficial."

- All data used in the assessment process must be verifiable; if the source of any numbers is unknown, team members should track it down.

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Appendix A

SLIDES RELATING TO VOLUME 5 OF THE SEVERE REACTOR ACCIDENT INCIDENT RESPONSE TRAINING MANUAL

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APPENDIX A

SLIDES RELATING TO SEVERE REACTOR ACCIDENT INCIDENT RESPONSE TRAINING MANUAL:

U.S. NUCLEAR REGULATORY COMMISSION RESPONSE

VOL. 5
NUREG-1210
ORNL/TM-9271/V5

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Slide 1

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OBJECTIVES

- Describe the roles of the U.S. Nuclear Regulatory Commission (NRC) in the event of a nuclear power plant accident
- Describe the NRC response modes, explain the criteria that determine each response mode, and list the basic components of the NRC response organization
- Describe briefly the role, limitations, and composition of the various elements of the NRC response organization
- List the other federal agencies and their roles
- Describe how the NRC interfaces with the licensee and with state and local officials during an emergency
- Describe the ongoing assistance provided by the licensee during an emergency
- Describe the kind of information that can be released as the "official" NRC position during an event (i.e., the Status Summary)

Slide 2

OVERVIEW

- NRC's role is to monitor, assist, and inform
- Since Three Mile Island (TMI), NRC's response capabilities have been improved
  - Single decision maker
  - Federal response plan
  - Direct communication lines
  - Designated staff of operations officers
  - Upgraded response facilities
  - Emergency response data system
- NRC's response modes
  - Normal
  - Standby
  - Activation

Slide 3

55

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NRC RESPONSE ROLES

- Monitor the licensee to ensure that appropriate protective action recommendations are being made off site
- Support off-site authorities, including confirming the licensee's recommendations to off-site authorities, *if requested*
- Support the licensee
- Keep other federal agencies and entities (e.g., Congress and the White House) informed of the status of the incident
- Keep the media informed of NRC's knowledge of the status of the incident, including coordination with other public affairs groups
- Intervene in a limited fashion to direct the licensee's on-site response in some unusual and very rare situations

Slide 4

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56

TYPICAL RELATIONSHIP OF ACCIDENT CLASSIFICATIONS, NRC RESPONSE MODES, AND NRC LEAD ORGANIZATIONS

Licensee Classification	Typical NRC Response Mode	Lead Organization
Alert and other situations that warrant monitoring	Standby	NRC Regional Office (RO) Base Team (BT)
Site Area or General Emergency	Initial Activation Expanded Activation Deactivation	Headquarters (Chairman) Site Team Region (Regional Administrator)

Slide 5

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57

TYPICAL NRC ACTIONS DURING A SEVERE NUCLEAR PLANT ACCIDENT[a]

Time (h)	Licensee	NRC Headquarters	NRC Regional Office	State/Local Authorities
0-1	Implements Emergency Operating Procedures (EOPs)	Decides to activate		Make protective action decisions
	Classifies event			Activate warning system
	Activates emergency organization			Give public instructions
	Implements/directs on-site protective actions and damage control			
	Recommends protective actions to off-site officials			
	Reports events to Headquarters (HQ)			
	Conducts conference calls with Regional Office (RO) and HQ			
	Activates Emergency Notification System (ENS)			
	Staffs the Technical Support Center (TSC)			

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Slide 6

58

TYPICAL NRC ACTIONS DURING A SEVERE NUCLEAR PLANT ACCIDENT (Continued)[a]

Time (h)	Licensee	NRC Headquarters	NRC Regional Office	State/Local Authorities
1-2	Activates the Emergency Operations Facility (EOF)	Operations Center (OC) is staffed	Incident Response Center (IRC) is staffed	Complete implementation of protective actions near the site
	Obtains first field monitoring results			
	Staffs the Health Physics Network (HPN)	Protective Measures Team (PMT) assesses initial licensee actions, and Reactor Safety Team (RST) assesses core and containment conditions	Regional Base Team (BT) continues to monitor situation, establishes counterpart with HQ OC, and begins to identify additional regional resources to be sent to the site and reaources to be brokered by Headquarters	
		RST assesses licensee event vs NRC criteria		Staff state and local centers
		PMT completes very simple initial dose projections based on licensee release estimates (IRDAM computer code)		
		PMT contacts state to discuss technical information		
		If major differences exist in assessments, PMT contacts technical-level licensee and state to discuss		
		Official NRC recommendations from the Executive Team (ET) — only if actions required to protect the public are not being taken		

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Slide 6 (Continued)

59

TYPICAL NRC ACTIONS DURING A SEVERE NUCLEAR PLANT ACCIDENT (Continued)[a]

Time (h)	Licensee	NRC Headquarters	NRC Regional Office	State/Local Authorities
2-3	Analyzes first coolant and containment samples	PMT completes initial dose projections based on plant conditions and core damage estimates from RST (IDAS computer code)		State monitoring team arrives on site
				State representation arrives at the EOF
		PMT starts to interface with Atmospheric Release Advisory Capability (ARAC) (NRC provides source term estimate)		
		ARAC results integrated into HQ assessments		
4-8			ST arrives at EOF	
			Briefed by licensee	
8-12		ET delegates authority to Director of Site Operations (DSO) (expanded activation)	DSO-approved ST takes over lead for NRC	
		PMT and HQ support ST effort	All dose assessments/ protective action assessment coordinated directly (licensee/Office of Nuclear Reactor Regulation/ off-site officials)	
		PMT and HQ continue to support ST	Additional NRC personnel arrive	

[a]This listing does not necessarily reflect the sequence of events within a particular time heading. Many activities will be taking place concurrently.

Slide 6 (Continued)

60

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NRC RESPONSE ORGANIZATIONS RESPONSIBLE FOR CONTROL FUNCTIONS

Function	Headquarters (HQ) [Operations Center (OC)]	Regional Base Team [Incident Response Center (IRC)]	Regional Site Team
Management	Executive Team (ET) Director	Base Team Manager	Site Team Leader (STL)/Director of Site Operations (DSO)[a]
Reactor Safety Assessment	Reactor Safety Team (RST) Director	Reactor Safety Manager (RSM)	Reactor Safety Coordinator (RSC)
Protective Measures Assessment	Protective Measures Team (PMT) Director	Protective Measures Manager (PMM)	Protective Measures Coordinator (PMC)
Safeguards/Security Assessment	Safeguards Team (SGT) Director	Safeguards/Security Manager (SM)	Safeguards/Security Coordinator (SC)
Public and News Media Information	Public Affairs (PA) Officer	Public Affairs Manager (PAM)	Public Affairs Coordinator (PAC)
Government Coordinator	Government Liaison Officer (GLO)	Government Liaison Manager (GLM)	Government Liaison Coordinator (GLC)
Administrative Support	Administrative Support Team (AST) Director	Resource Manager (RM)	
Response Coordination	Response Coordination Team (RCT) Director	Emergency Response Manager (ERM)	Emergency Response Coordinator (ERC)
Congressional Coordinator	Congressional Liaison (CL) Officer		

[a]The STL becomes the DSO on the transfer of authority and responsibility (declaration of Expanded Activation).

Slide 7

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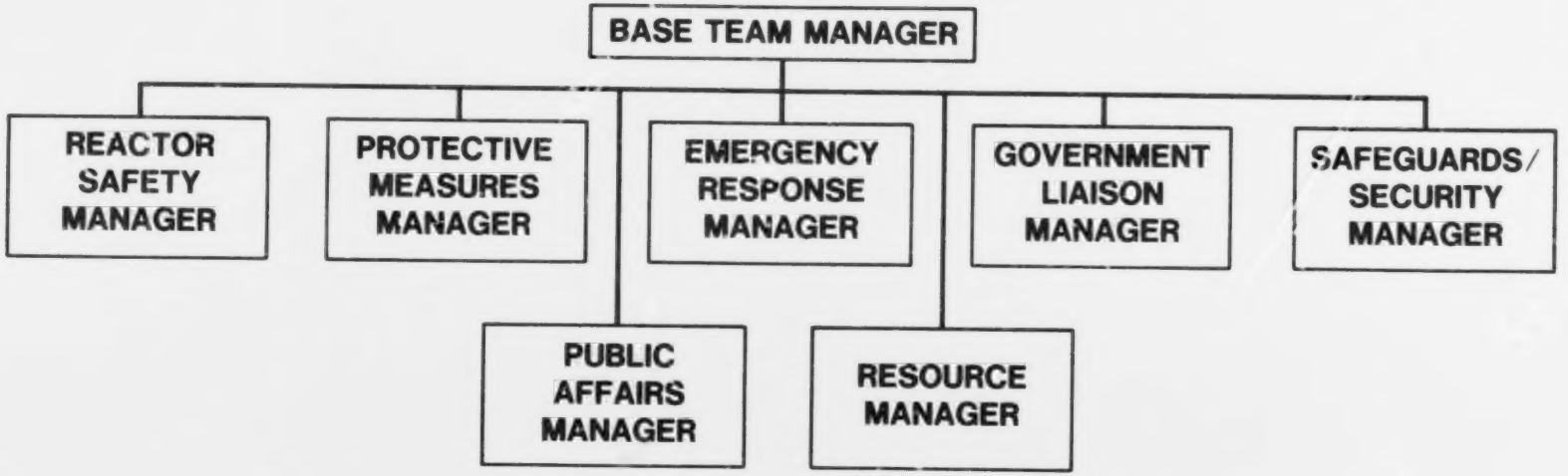
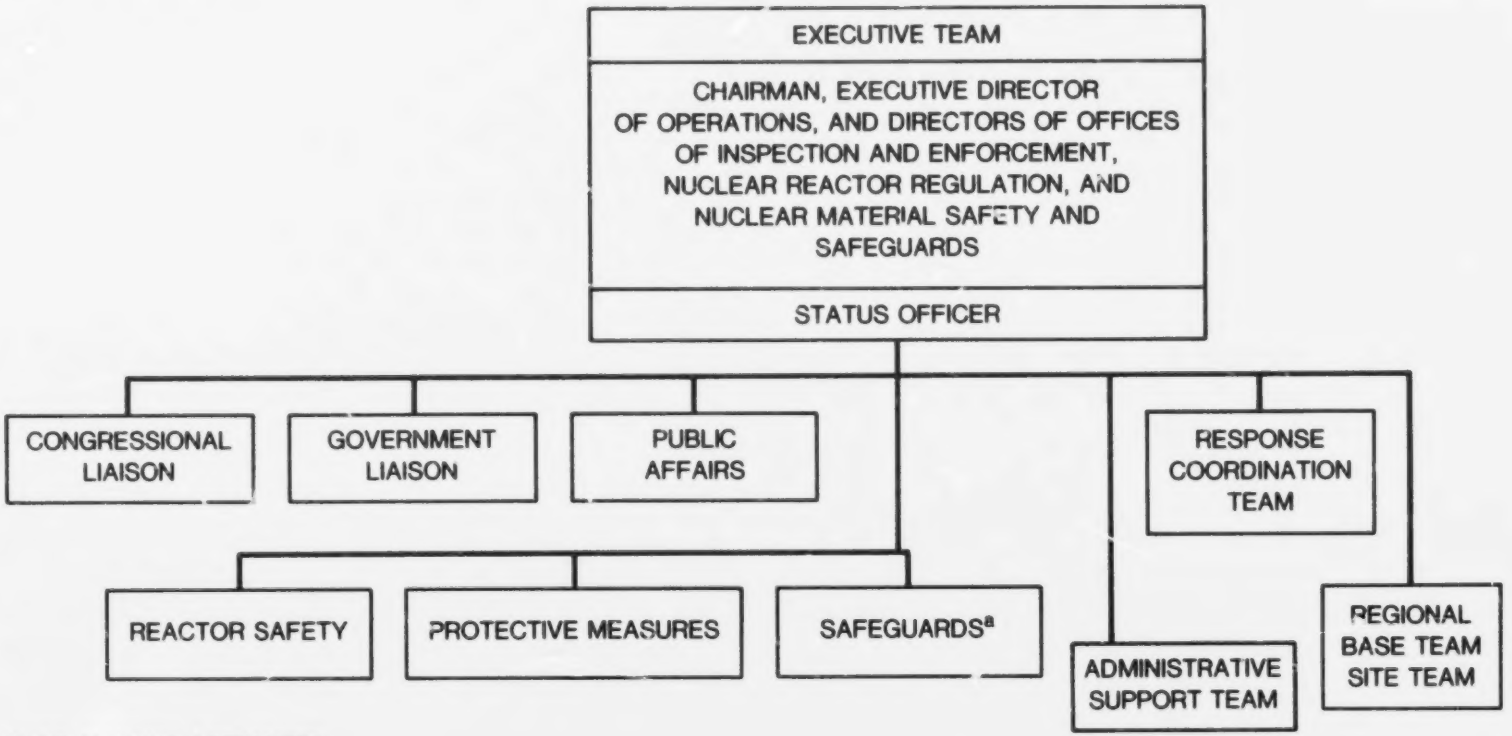
TYPICAL ORGANIZATION OF THE BASE TEAM



Slide 8

ORGANIZATION OF NRC HEADQUARTERS
(LEAD DURING INITIAL ACTIVATION)


EXECUTIVE TEAM
CHAIRMAN, EXECUTIVE DIRECTOR OF OPERATIONS, AND DIRECTORS OF OFFICES OF INSPECTION AND ENFORCEMENT, NUCLEAR REACTOR REGULATION, AND NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
STATUS OFFICER
CONGRESSIONAL LIAISON
GOVERNMENT LIAISON
PUBLIC AFFAIRS
RESPONSE COORDINATION TEAM
REACTOR SAFETY
PROTECTIVE MEASURES
SAFEGUARDS[a]
ADMINISTRATIVE SUPPORT TEAM
REGIONAL BASE TEAM SITE TEAM

[a]NOT ALWAYS ACTIVATED.

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Slide 9

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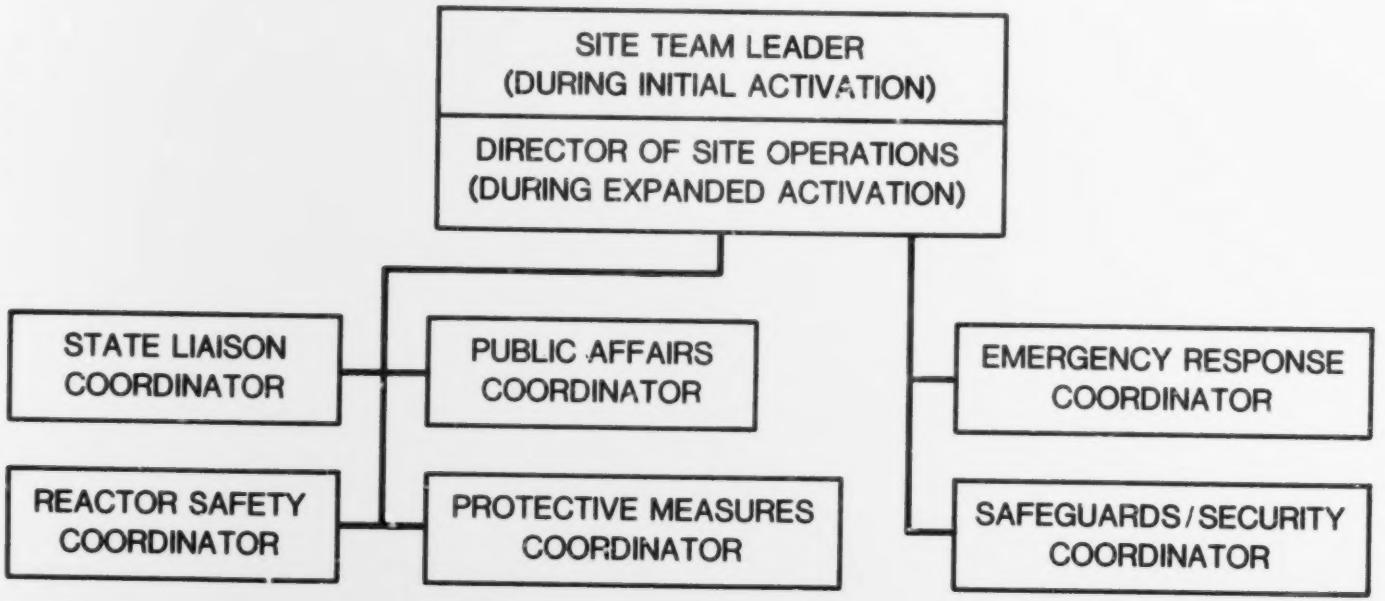
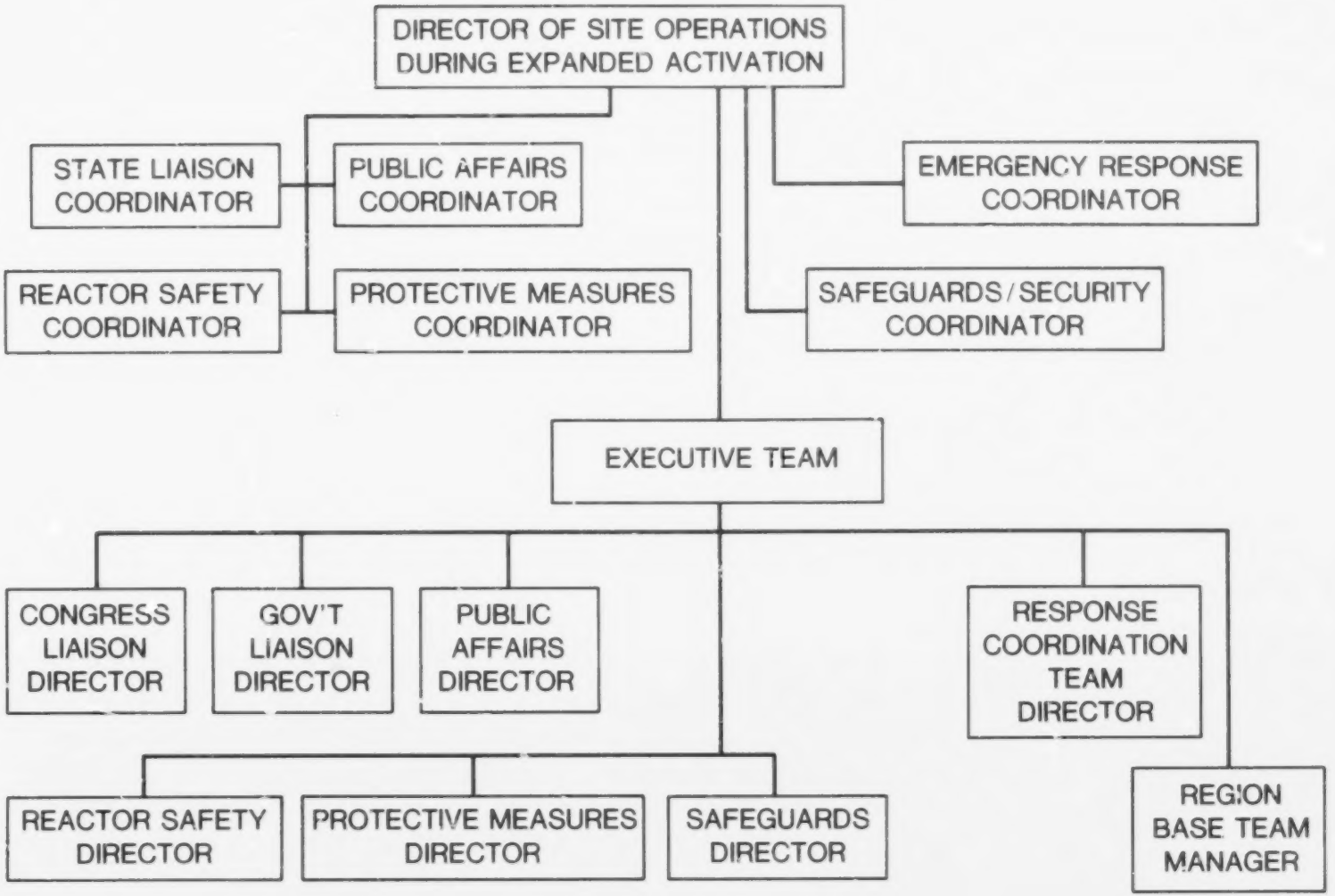
TYPICAL ORGANIZATION OF THE SITE TEAM (LEAD DURING EXPANDED ACTIVATION)



Slide 10

EXPANDED ACTIVATION SITE TEAM ORGANIZATION CHART



Slide 11

65

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RESPONSE MANAGEMENT

- Primary role of response management
  - Direct the NRC response
  - Act as the primary spokesperson
- May be asked to confirm a decision or recommendation by licensee or off-site officials
  - Must act promptly

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Slide 12

AUTHORITIES AND RESPONSIBILITIES THAT MAY BE TRANSFERRED TO THE DIRECTOR OF SITE OPERATIONS

- Authority to recommend actions to the licensee
- Authority to recommend off-site actions, either confirming licensee recommendations or providing additional NRC recommendations
- Authority to direct the licensee to take specific actions — but only in rare and unusual circumstances
- Responsibility to act as the primary spokesperson for NRC in responding to the media
- Authority to supervise all NRC personnel at the site
- Authority to represent NRC in interactions with other agencies

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Slide 13

TYPES OF INFORMATION NEEDED FOR RESPONSE MANAGEMENT

- Significant developments
- Assessments of all parties
  - Licensee
  - State
  - Other Federal agencies
  - Staff
  - Other industry experts
- Bases and significance of differences in assessments
- Limitations and degree of sensitivity of the analysis
- Recommendations and options
  - Input about actions currently being taken
  - Basis
- Proper contacts

Slide 14

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OBJECTIVES OF REACTOR SAFETY ASSESSMENT

- Develop NRC assessments (and/or confirm the licensee's assessments) of current and projected core and containment conditions
- Monitor licensee response [e.g., implementation of Emergency Operating Procedures (EOPs)] to ensure that proper corrective actions are being taken to minimize the consequences of the accident
- Characterize possible core conditions and release pathways for the protective measures dose assessment
- Furnish these assessments to the PMT and the ET/DSO with advice and direction for the licensee, if appropriate

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Slide 15

REACTOR SAFETY ASSESSMENT METHODS

- Look for direct indicators of core and containment conditions
- Evaluate trends of direct indicators
- Conduct mass and energy balance calculations
- Identify release pathways and degree of core damage (core temperature)

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REACTOR SAFETY LIMITATIONS

- Until the Site Team arrives, the source of information relies on telephone contact
- Information may not be current
- The team is not as familiar as the licensee with the specific plant, its equipment, and conditions
- The amount of information available from the licensee is limited

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Slide 17

OBJECTIVES OF THE PROTECTIVE MEASURES ASSESSMENT

- Monitor the licensee's public protective action recommendations
- Obtain the status of protective actions implementation by off-site officials
- Assess and confirm the on-site protective actions taken by the licensee
- Exchange technical information with the licensee and state and local agencies to evaluate the significance of any differences
- Provide independent protective action assessments based on reactor status and dose analyses and evaluate external (licensee, state, local, or other agency) assessments for the ET or DSO
  - Ensure that the ET or DSO is given an immediate (within 15 min) assessment of:
    - Any licensee protective action recommendation
    - Any conditions which indicate that protective actions are warranted

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Slide 18

ROLES OF DOSE PROJECTIONS DURING A SEVERE ACCIDENT (A GENERAL EMERGENCY)

- If a release is under way, identify the area that should be monitored first to determine if evacuation of sheltered people is required because of ground contamination (e.g., 1 rem/h)
- Determine if protective actions taken on the basis of plant conditions should be expanded
- Serve as a secondary indicator of a General Emergency (Control Room or Technical Support Center dose projection at the site boundary)

Slide 19

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73

LIMITATIONS IN PROTECTIVE MEASURES ASSESSMENTS

- Until the Site Team arrives, the source of information relies on telephone contact
- Information may not be current
- The team is not as familiar as the licensee with the specific plant, its equipment, the response plan, and conditions

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Slide 20

74

OBJECTIVES OF SAFEGUARDS ASSESSMENT

- Advise response management about the security and safeguards developments and recommend appropriate actions
- Provide safeguards information to appropriate law enforcement agencies (including the FBI) and coordinate efforts for evaluating appropriate remedial actions
- Provide plant-specific information and analysis concerning the safeguards contingency plan to decision makers

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Slide 21

OBJECTIVES OF THE GOVERNMENT LIAISON

- Provide state and other federal organizations with the status of the NRC response
- Coordinate with other federal agencies responses related to on-site activities
- Keep federal and state agencies informed
  - Establish contact with state and off-site protective action decision makers
  - Be aware of their considerations in the event that the NRC decides to make or discuss protective action recommendations
- Brief the ET and the DSO on the status of other agency responses

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Slide 22

76

RESPONSIBILITIES OF THE CONGRESSIONAL LIAISON

- In the event of an incident, provide adequate, accurate, timely, and consistent information to
  - Members of Congress
  - Their staffs
  - Principal congressional oversight committees

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Slide 23

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PUBLIC AFFAIRS FUNCTIONS AND OBJECTIVES

- Prepare and coordinate information releases
- Support response management
- Monitor national media coverage
- Inform the public and the media of NRC actions

Slide 24

78

ROLE OF THE RESIDENT INSPECTOR

- Report to the site
- During the Standby Mode
  - Assist in evaluating incident status and licensee actions
  - Assist in deciding the appropriate NRC response mode
  - Interface with the Regional and Headquarters Standby Teams
- During the Initial Activation Mode
  - Serve as the NRC representative on site in the TSC, control room, or licensee command center/area
  - Provide information as requested by the OC and NRC
  - Interface with the Regional and Headquarters Standby Teams as requested to provide perspective
- During Expanded Activation Mode
  - Join the Site Team
  - Interface as assigned by the DSO
- Log information

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Slide 25

ROLES OF FEDERAL AGENCIES DURING AN EMERGENCY RESPONSE

Agency	Role During an Emergency
Nuclear Regulatory Commission [Cognizant Federal Agency (CFA)]	Coordinates technical evaluation assessment
Federal Emergency Management Agency (FEMA)	Off-site logistical response
Department of Energy (DOE)	Coordinates off-site monitoring and data evaluation
	Provides technical assistance
	EG&G and Atmospheric Release Advisory Capability (ARAC)
Department of Health and Human Services (HHS)	Assists with protection of human health
	Provides technical and nontechnical assistance
Department of Agriculture (USDA)	Assists in the development of agricultural protective measures and damage assessments
National Oceanic and Atmospheric Administration (NOAA)	Provides meteorological services as required
Department of Housing and Urban Development (HUD)	Assists with location of housing, if required
Department of the Interior (DOI)	Responsible for federal lands, parks, and natural resource facilities
Department of Transportation (DOT)	Can assist with location and coordination of transportation resources
National Communication System (NCS)	Can provide communications support to federal agencies

Slide 26

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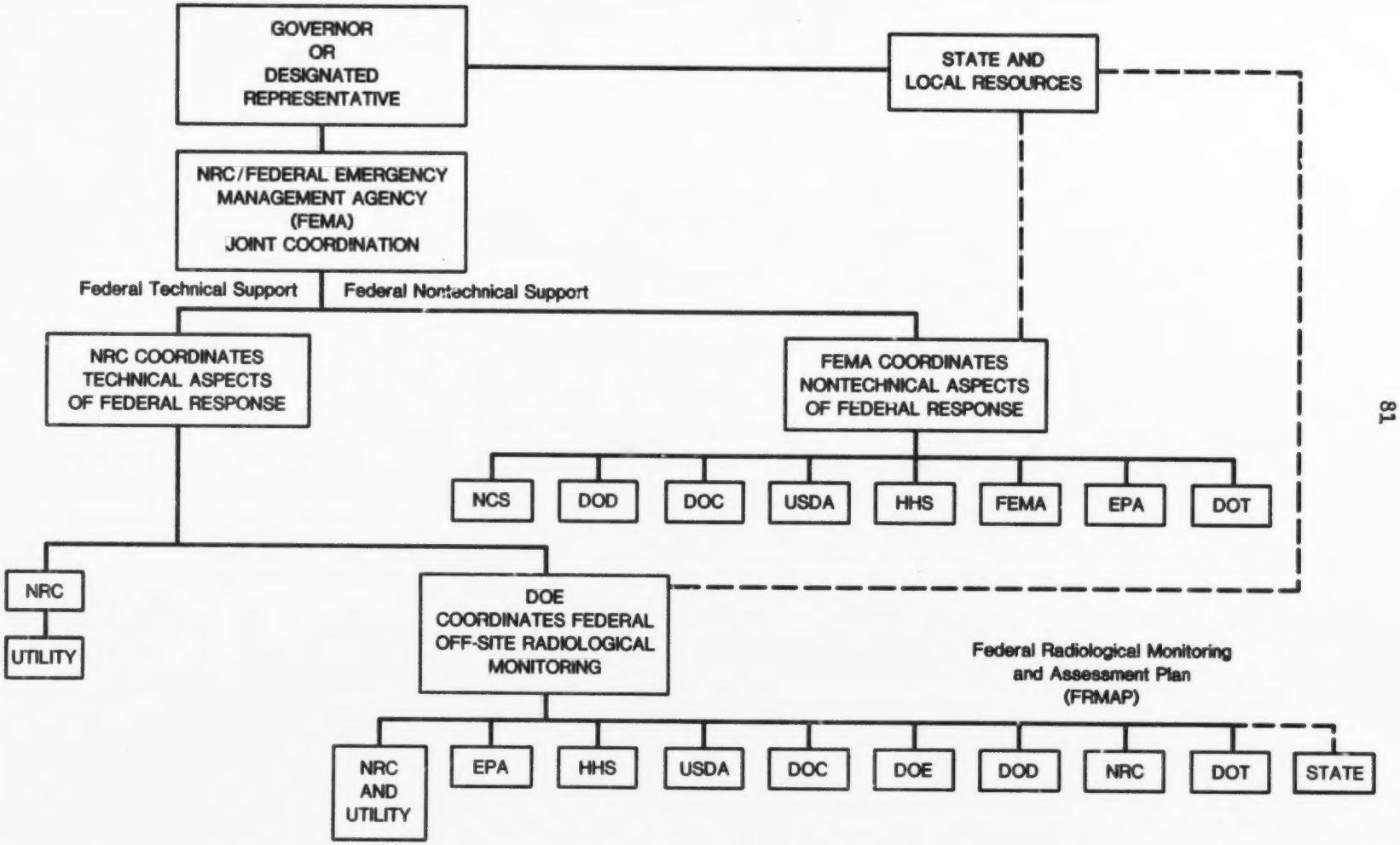
FEDERAL RESPONSE MANAGEMENT FOR A RADIOLOGICAL EMERGENCY AT A NUCLEAR POWER REACTOR



Slide 27

81

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ACTIVITIES OF TYPICAL FEDERAL AGENCIES OTHER THAN NRC FOLLOWING INITIATION OF THE FRERP

Federal Agency	Response Role	Estimated No. of Responders	Estimated Time of Arrival on Site (h)	Personnel and/or Equipment
Nuclear Regulatory Commission (NRC)	Monitors licensee's actions	50–70	2–6	15–20
	Coordinates federal technical response		6–24	50–70
	Provides support to licensee and off-site authorities			
	Assesses protective action recommendations and actions			
Department of Energy (DOE)	Radiological Assistance Teams (RATs)	6–10	1–5	
	Monitoring support to state			
	Aerial Measurements Systems (AMS)	100–150	8–12	Aerial support (planes or helicopters)
	Establishes Federal Radiological Monitoring and Assessment Center (FRMAC)			
	Coordinates initial off-site monitoring; assists in monitoring		6–12	
Federal Emergency Management Agency (FEMA)	Coordinates nontechnical off-site support to off-site authorities	10–20	6–12	Regional Office
	Provides logistical support for federal agencies		8–16	Senior FEMA Officer (SFO)

Slide 28

82

ACTIVITIES OF TYPICAL FEDERAL AGENCIES OTHER THAN NRC FOLLOWING INITIATION OF THE FRERP (Continued)

Federal Agency	Response Role	Estimated No. of Responders	Estimated Time of Arrival on Site (h)	Personnel and/or Equipment
Environmental Protection Agency (EPA)	Provides analytical radiological measurements support	20–25	6–10	Advance team
	Coordinates long-term off-site monitoring		8–16	Mobile laboratory
Department of Health and Human Services (HHS)	Provides medical and radiological assistance and advice and ensures availability of human services	2–4	8–16	
Department of Agriculture (USDA)	Provides radiological advice on food products	4–6	2–10	
Department of Transportation (DOT)	Provides transportation advice and assistance to state and local authorities	1–2	6–10	
National Communication System (NCS)	Manages communications assets and assists in solving communication problems for federal agencies	2–4	6–10	
Department of Commerce (DOC)	Provides meteorological information and resources		As requested [National Weather Service (NWS) offices are continuously staffed]	
Department of Defense (DOD)	Provides logistical and radiological assistance		As requested	

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Slide 28 (Continued)

83

LOCATION OF FEDERAL AGENCY DECISION MAKERS

Agency	Location of decision makers[a,b]			
	Licensee Emergency Operations Facility	Federal Response Center	Federal Radiological Monitoring and Assessment Center	Headquarters (in Washington, D.C., NRC Operations Center)[c]
Department of Energy (DOE)			(X,C,M)	
Environmental Protection Agency (EPA)			X,C,M	P,R
Department of Health and Human Services (HHS)				P,R,M
Department of Agriculture (USDA)		P,R		
Federal Emergency Management Agency (FEMA)		P,R,SFO		
Nuclear Regulatory Commission (NRC)	(P,R,X,C)		M	

[a]The agency in the lead for a respective function is indicated by parentheses.

[b]M = field monitoring measurements; P = protective action assessment; R = reentry (relocation and resettlement) assessment; C = dose calculations (per hour); X = dose commitment (per hour); SFO = senior FEMA official.

[c]After an agency's representative arrives at the NRC Operations Center, information will flow to and from that agency.

Slide 29

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OFFICIAL NRC POSITION

- The status summary report is the only official NRC position
- Two levels of contact are maintained with the licensee and off-site officials
  - Technical (data)
  - Management (decisions)

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85

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TECHNICAL INTERFACE WITH THE LICENSEE: INITIAL NRC INFORMATION NEEDS

- Description of the abnormal occurrence (including time of occurrence), corrective actions, and/or projected degradation (identify the major indicators on which this assessment is based)
- Core condition and projection (identify the major indicators on which this assessment is based)
- Containment condition and projection (identify the major indicators on which this assessment is based)
- Protective actions recommended to off-site authorities, the basis for such actions, and the off-site official contacted
- Names and phone numbers of
  - TSC manager/director (to discuss licensee assessment of plant conditions)
  - EOF manager/director (to discuss overall response)
  - Protective actions/radiation manager/director (to discuss the bases and status of protective action recommendations)

Slide 31

CONTINUING TECHNICAL INFORMATION NEEDS

System/Network	Information
Emergency Notification System	Reactor vessel liquid level (if available)
	Reactor coolant pressure
	Hot-leg temperature [pressurized water reactor (PWR)]
	Cold-leg temperature (PWR)
	Pressurizer level (PWR)
	Steam generator level (PWR)
	Engineered Safety Feature system status
	Drywell pressure [boiling water reactor (BWR)]
	Suppression pool water temperature (BWR)

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Slide 32

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CONTINUING TECHNICAL INFORMATION NEEDS (Continued)

System/Network	Information
Health Physics Network	Abnormal radiation levels from sampling or monitors – Coolant (primary or secondary) – Containment – Air ejector exhaust (PWR) – Standby and off-gas treatment (BWR) – Area – Process – Environmental Meteorological information – Weather conditions – Wind conditions – Atmospheric stability

[a]The NRC Operations Center would need this information on a regular basis (every 30 min) for any incident. Additional items may be added during the course of the response to an incident.

Slide 32 (Continued)

88

MAJOR POINTS

- The principal role for NRC in incidents at nuclear power plants is to monitor actions by the licensee to ensure that people in the vicinity of the plant are adequately protected and to provide any assistance requested by the licensee or off-site officials
- NRC response procedures for serious events are geared toward establishing the lead and focus for NRC at the site as soon as possible
- During an emergency, the Chairman or his designee has the authority of the Commission; only one person is in charge
- Once the Director of Site Operations (DSO) has been designated, the lead for NRC is at the site, and the response teams at NRC Headquarters work for and support the Site Team (ST)
- NRC will not normally question licensee or off-site dose assessments if they are within an order of magnitude of NRC assessments unless the assessments have a major influence on protective measures
- All response team members must recognize the considerable limitations of performing their functions and provide their management with an assessment of how good their analyses are

Slide 33

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MAJOR POINTS (Continued)

- The Resident Inspector (RI) will generally be the first NRC staff member at the site and is the NRC person most knowledgeable about the site
- The Federal Emergency Management Agency (FEMA) is responsible for coordination of the federal nonradiological response to all radiological emergencies that require a significant multiagency presence. NRC is responsible for coordinating the technical aspects of any federal response involving NRC-licensed activities
- Response personnel should discuss their assessments with the licensee before forwarding them to the Executive Team (ET) or DSO
- All "official" NRC recommendations to off-site officials will be provided by the Director of the ET (Chairman) or the DSO
- The Status Summary will contain official, approved information that can be released to anyone
- All data used in the assessment process must be verifiable; if the source of any numbers is unknown, team members should track it down

Slide 33 (Continued)

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This is one in a series of volumes that collectively provide for the U.S. Nuclear Regulatory Commission (NRC) emergency response personnel the necessary background information for an adequate response to severe reactor accidents. The volumes in the series are:

- Volume 1 -- Overview and Summary of Major Points
- Volume 2 -- Severe Reactor Accident Overview
- Volume 3 -- Response of Licensee and State and Local Officials
- Volume 4 -- Public Protective Actions -- Predetermined Criteria and Initial Actions
- Volume 5 -- U.S. Nuclear Regulatory Commission Response

Each volume serves, respectively, as the text for a course of instruction in a series of courses for NRC response personnel. These materials do not provide guidance or license requirements for NRC licensees or state or local response organizations. Each volume is accompanied by an appendix of slides that can be used to present this material. The slides are called out in the text.

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